

Detroit Refrigeration Contractors Entertain Their Families at a Picnic



To show the size of its organization the Detroit Refrigeration Contractors, Inc., organization of independent service engineering firms, submitted this photograph of their First Annual Outing, held Sunday, June 28, 1936, at Cass-Benton Park. Manufacturers' agents, jobbers, and City Safety Engineering department officials were also present. E. C. McKerracher was in charge of the arrangements for the outing.



Ballplayers among the service contractors who starred at the outing included: (upper row) Messrs. Chandler, Davey, Stewart, Perry, Racklyet, Butler, and Fischer. (Bottom) Joynson, Haviland, Oberer, Freeley, Scott.

Classified

RATES: Fifty words or less, one insertion, \$2.00, additional words four cents each. Three insertions \$5.00, additional words ten cents each.

PAYMENT in advance is required for advertising in this column.

REPLIES to advertisements with Box No. should be addressed to Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

POSITIONS WANTED

REFRIGERATOR Service Man, fully trained and experienced in the field on all makes, domestic and commercial, desires position anywhere in connection with the industry. Good character, college education. 24 years of age, tools and car. Write **ARTHUR POPE**, 105 Oak St., De Kalb, Ill.

FRANCHISE AVAILABLE

MY HEALTH will not permit me to work 24 hours a day. Therefore, I must sell my Kelvinator commercial distributorship franchise. Service alone will better than pay all expenses. I have two service trucks, good stocks of parts and supplies, dandy service contracts and no indebtedness. Price is reasonable. Box 809, Electric Refrigeration News.

EQUIPMENT FOR SALE

MODERNIZE your old refrigerators with black modernistic 4-inch legs at only a dollar per set. Made to fit all makes of boxes. Send your list of surplus materials to us. **ESCOL JOBBING CO.**, 2323 E. 70th Place, Chicago, Ill.

STANDARD WATER cooled condensers new—repaired—exchanged. New replacements for Frigidaire Model N, \$19.00; for Model C, \$26.00. Model N Frigidaire condenser repaired or exchanged, \$10.00; Model C, \$15.00. Send for our new bulletin, just issued, illustrating Standard evaporators, condensers, fan coils. **STANDARD REFRIGERATION PARTS COMPANY**, 5101 W. Madison St., Chicago, Ill.

GIBSON highside float evaporators, all porcelain, \$6.95 (4 tray). Gibson, Spanton and Trukold seals \$2.35. Cutler-Hammer thermostats (new) \$2.45. Detroit Lubricator thermostatic expansion valve, model No. 673 with flange \$3.95; cut for any size S.A.E. fitting \$4.45. Johnson Motor compressor, direct drive units suitable for Gibson, Majestic, Spanton, Bohn replacements, twin cylinder 7 1/2 inches in height \$14.50. Fully guaranteed (factory rebuilt). Federal 6 cubic ft. 1936 model equipped with new type Westinghouse capacitor

TEMPRITE
INSTANTANEOUS
BEER and WATER COOLERS
Detroit Michigan

motor \$60.00, in original crates. **FEDERAL REFRIGERATOR CORP.**, 57 E. 25th St., New York City.

CABINETS—closeouts—1935 and 1936 high-grade cabinets—steel frame—Balsam Wool insulation—attractive styling—4, 5, 6 & 8 Cu. Ft. Dulux models—6 & 8 Cu. Ft. all porcelain models—excellent condition—low prices. Write or wire **MIDWEST STAMPING & ENAMELING COMPANY**, Morrison, Ill.

FRIGIDAIRE plain T two temperature valves \$2.50. Mercolid No. 848 controls complete with tube \$5.00. Try Warrenol for stuck-up compressors. Samples available. Thermostats, float valves, and expansion valves rebuilt. Prompt service. Same day shipment on refrigerant gases. **HALECTRIC LABORATORY**, 1793 Lakeview Road, Cleveland, Ohio.

EQUIPMENT WANTED

WANTED TO BUY—General Electric hermetic sealed units, household models preferred. **REX REFRIGERATION SERVICE, INC.**, 446-48 East 79th Street, Chicago.

REPAIR SERVICE

GENERAL ELECTRIC sealed units repaired, exchanged. Work guaranteed. Majestic units rebuilt, exchanged, \$20.00. Satisfied customers in all parts of the United States. Give model when writing. **REFRIGERATOR ENGINEERING PARTS & SERVICE CO.**, 2800 So. Parkway, Chicago, Ill.

MAJESTIC UNITS; any model, rebuilt or exchanged \$20.00 f.o.b. Chicago. Guarantee six months. All models in stock for prompt exchange. Wholesale only. **REFRIGERATION PRODUCTS, INC.**, 122 W. Illinois St., Chicago, Ill.

GENERAL ELECTRIC monitor top units. Exchanged—rebuilt—a wholesale service for dealers. Large unit replacement stock carried on most types. Our shop equipment includes special tools and machinery essential to reoperate these hermetics properly. We do not experiment on your units. We have been successfully rebuilding General Electric units for over three years. The unit returned to you will resemble a new one in operation, appearance and current consumption. Our price is low for the quality of work furnished. When writing give all information as on name plate in front of the control switch. Units guaranteed for one year against defective operation. **REX REFRIGERATION SERVICE, INC.**, 446-48 E. 79th St., Chicago, Ill.

MAJESTIC UNITS repaired \$17.50. General Electric units, \$30.00. Send your Majestic units to Ft. Smith and get them fixed right. We positively guarantee that we can make Majestic freeze as fast as when new. **PENO SERVICE CO.**, Ft. Smith, Ark.

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. **H. R. VAN DEVENTER (ASRE)**, Patent Attorney, 342 Madison Avenue, New York City.

Letters from Service Men

Service Data Wanted

On Bohn Refrigerators

Jay Vee Refrigeration Service
Service All Makes
45-10 50th Ave., Woodside, L. I. Gentlemen:

Would greatly appreciate any information in reference to service data on Bohn units, as there are quite a number in my particular territory, and this information will greatly assist me in giving efficient service on these units. Especially where compressor parts can be purchased.

JOHN HIGGINS.

Answer: We attempted to get this information for you from the Bohn Refrigerator Co., but have failed to get a reply. We would suggest that you write to the Sunbeam Electric Mfg. Co., 225 W. Morgan Ave., Evansville, Ind.

231 Fifth St., N. E.
New Philadelphia, Ohio

Gentlemen:

Please send a copy of the **MASTER SERVICE MANUAL C.O.D.** \$3.00 to C. F. Stemple at the above address.

Does this manual contain service information on the model BE-6 (Serial No. 26909E) Bohn refrigerator, which was manufactured by the Bohn Electric Refrigerator Co., St. Paul, Minn.? If the manual does not have this information where can it be obtained?

C. F. STEMPEL.

Answer: Sorry, but we have no provision for sending books on a c.o.d. basis.

With reference to your inquiry regarding service information on the Bohn refrigerator, the **SERVICE MANUAL** contains information covering the same type of system as that employed in the Bohn refrigerator.

If, however, you wish specific information regarding parts, etc., we would suggest that you communicate with the Sunbeam Electric Mfg. Co. at Evansville, Ind., manufacturer of the Bohn condensing unit.

Needs Seal for Socold Unit

Elkader, Iowa

Gentlemen:

Would it be possible for you to inform me whether or not I could get parts for a domestic household Socold compressor, and if so, where? The part necessary for me to have would be the seal. I looked for a number on the compressor but could find none, however, the number 36218 was in the base of the cabinet.

I would be grateful for any information you would be able to give me.

K. KELEHER.

Answer: The Socold Refrigerator Co. of Lynn, Mass., discontinued operations in 1929. We do not know where a stock of seals for the unit might be available.

However, we suggest that you make inquiries of manufacturers of replacement parts for all types and makes of compressors who have advertised in **ELECTRIC REFRIGERATION NEWS**.

Retail Store Serviceman

Enclosed is money order for three dollars (\$3.00) for one of the 1936 **MASTER SERVICE MANUALS**. I am a serviceman for a retail store and would like to be put on your mailing list.—**Wm. A. Hammond**, 15 Cedar St., Marblehead, Mass.

Enclosing \$3 for **ELECTRIC REFRIGERATION NEWS**, to start with June 10 issue. Please enter my name on your Catalog Mailing list.—**Edw. F. Spang**, 3922 N. Oakley Ave., Chicago, Ill.

Please put my name on your catalog mailing list.—**Mr. Loy Fry**, 611 E. Kansas, McPherson, Kan.

Most Interesting

I am a subscriber to your **ELECTRIC REFRIGERATION NEWS**, and would like to have you place my name on your catalog mailing list.

I found your paper most interesting, especially the technical data and articles on service which are of much benefit to the serviceman.—**Louis R. Erier**, 1865 Carter Ave., Bronx, N. Y.

15 Years Experience

We get the **E. R. N.** each week and it has something on each page worth while.

I do service work for a large dealer here and have my own independent service for 15 years. Recognized by all the parts houses such as Borg Warner, Harry Alter, H. Channon, etc.

Will you add me to the list of service men for the mailing list of manufacturers.—**E. C. Harris**, P. O. Box 273, Kankakee, Ill.

Canadian Utility Co.

Moncton Electricity and Gas Co., Ltd.
Moncton, New Brunswick
Canada

Please enter our name on your mailing list for Trade Literature and Catalogues.—**S. H. Perry**.

There's Nothing Like the News

Please place my name on your catalogue mailing list. I receive your paper through Allen & Knottwell Pharmacy and think it is the best of its kind that I have found.

Do you know who publishes an electrical magazine similar to yours?—**Harry Schamel**, Box 103, Indianola, Nebr.

R. A. C. I. Student

As a subscriber of the **NEWS** and a student of the **R. A. C. I.** of Chicago I would appreciate having my name added to your catalog mailing list.—**Lenn G. Smith**, 5623 Kennerly Ave., St. Louis, Mo.

Kelvinator Service Man

Enclosed please find money order in the amount of \$3.00 to cover one years subscription to **ELECTRIC REFRIGERATION NEWS** to be sent to:

Henry Murbach, 115 W. Broadway, Winona, Minn.

Mr. Murbach is Kelvinator Service Man for the R. D. Cone Hardware Co. Kelvinator Dealers for this locality.

Being a subscriber myself, I ask that you kindly place me on your catalog mailing list.—**L. E. Thorne**, 176 W. 3rd St., Winona, Minn.

Splendid Publication

Will you please change my address as it now stands on your records to 616 W. Center St., Warsaw, Ind.

I wouldn't be without your splendid publication. Would you please enter my name on your catalog mailing service?—**Devoe Leedy**, 616 W. Center St., Warsaw, Ind.

Majestic Hermetic Service

Enclosed you will find 25 cents in stamps for which I would like a copy of the August 16, 1933 issue of **ELECTRIC REFRIGERATION NEWS** describing the servicing of Majestic Hermetic Refrigerators. Also place my name on your Catalogue Mailing List, as it will be of great help and convenience for anyone in the refrigerator business. I thank you.—**Alfred Walland**, Box 112, Brisbane, Calif.

Unbiased Editorials

Enclosed is \$3.00 for continuation of my subscription for the **NEWS** which I find very interesting and helpful. Will you also enter my name to your catalog mailing list.

I want to compliment you on your good and unbiased editorials especially the one with reference to the advertising methods of Grunow that was in the May 27 issue.

I also enjoy the articles of George Taubeneck. His style of writing and

his ability to paint word pictures are tops with me.—**C. E. Wilkinson**, 2613 Wendell Ave., Detroit, Mich.

Finished U. E. I. Training

I have just finished a training in Refrigeration & Air Conditioning with Utilities Engineering Institute of Chicago and was introduced to your paper **ELECTRIC REFRIGERATION NEWS**. I think it is a wonderful publication for anyone in this field. So please find enclosed a money order for \$3.00 for which please send me a years subscription.

Also please put my name on your free catalogue mailing list.—**H. S. Hill**, 202 McKinley St., Janesville, Wis.

The Kirby Ice Machine Co., Ltd.
Agents for "Hostess" Electric Refrigerators. Service on all makes of refrigeration machinery

314 Notre Dame Ave.
Winnipeg, Manitoba

Kindly enter our name on your catalog mailing list, and oblige.

B. KIRBY.

Please send me information as to rates of **ELECTRIC REFRIGERATION NEWS** and **MASTER SERVICE MANUAL**. I am enclosing a money order of one dollar (\$1.00) so I'll not miss the very next issue of your paper. You may place my name on your catalog mailing list.—**Richard M. Reinhard**, 916 N. 2nd St., Reading, Pa.

Enclosed find subscription blank and \$5.00. Please forward the **MASTER SERVICE MANUAL** to the below address and I will furnish you with a further address for future copies of the **NEWS** at an early date.

Please also put me on your supply house mailing list.—**Robert Story**, 233 Somerset St., Plainfield, N. J.

I am enclosing a U. S. money order for \$5.00 to cover costs for one year's subscription to the **ELECTRIC REFRIGERATION NEWS** and the **MASTER SERVICE MANUAL**.

Kindly place my name on your catalog mailing list.—**Chester D. Masson**, Hawthorne Ave., Middle River, Md.

Please send me a copy of the **ELECTRIC REFRIGERATION NEWS** that contained the guarantees of the different refrigerators on the market. We are finding the **NEWS** very helpful in our work.—**Charles G. Sprong**, 421-23 American Ave., Long Beach, Calif.

Please change my address to 33 E. Warren Ave., Youngstown, Ohio from 605 Market St., Youngstown, Ohio for my subscription to **ELECTRIC REFRIGERATION NEWS**. This is a very fine publication. I get a lot of good pertinent data from it.—**H. E. Sutton**, 33 E. Warren Ave., Youngstown, Ohio.

Please put me on your mailing list.—**Kermit M. Jones**, Route 1, Box 41, Oregon City, Oregon.

Please put me on your mailing list. Thank you.—**Harry Weber**, Harleysville, Pa.

Please enter my name on your catalogue mailing list.—**Franklyn R. Beemish**, 76 E. Cleveland Ave., Morrisville, Pa.

I find the **NEWS** the most lively up-to-the-minute Refrigeration paper I've ever seen.—**Cyrus Witter**, 52 Brunswick St., Newark, N. J.

I want to take advantage of the combination rate for two books and I also want one year subscription to **ELECTRIC REFRIGERATION NEWS**. I am sending you \$5. Please place my name on your catalog mailing list.—**Alex Hetman**, 53 Girard Ave., Motowan, N. J.

Please add our name on list for manufacturing literature.—**Electric Refrigeration Co.**, 609 E. 25th St., Baltimore, Md.

Please list my name for mailing literature.—**James H. Harland**, 10322 Parkgate Ave., Cleveland, Ohio.

REFRIGERATION NEWS

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DETROIT, MICHIGAN, JULY 15, 1936

Copyright, 1936, by
Business News Pub. Co.THREE DOLLARS PER YEAR
TEN CENTS PER COPY**Air Conditioner
Orders for May
Total \$4,415,681****Self-Contained Type Shows
Largest Gain; Month Is
Highest for Year**

WASHINGTON, D. C.—Total value of orders booked for air-conditioning equipment during May was \$4,415,681, according to a report covering 98 manufacturers released through William L. Austin, director of the Bureau of Census, Department of Commerce.

Value of orders in May was the highest for any month of this year, and represented a substantial gain over the \$3,264,602 in orders reported in April.

Biggest gain in any division of equipment was that shown for self-contained unit conditioners, the \$509,024 worth of orders booked in May representing an increase of just about 500% over the April figure.

Unit comfort coolers, not of the self-contained type, also showed a substantial gain with \$878,797 in May orders as compared with \$541,155 in April.

Central-station systems for human comfort also gained, but industrial cooling plants showed a marked decline.

Refrigerating or cooling equipment sold to contractors or other distributing outlets (not manufacturing air conditioners) for air-conditioning systems (when such knowledge as to the application is available) totaled \$339,441 in May, as compared to \$273,932 in April.

A complete tabulation of the value of orders booked for air-conditioning equipment in May will be found on page 14 of this issue.

**Kelvinator Commercial
Shipments for June
Total 5,748 Units**

DETROIT—June shipment of 5,748 Kelvinator commercial refrigeration units represents a 52.9% increase over the 3,759 for the corresponding period of last year, reports J. A. Harlan, commercial sales manager of Kelvinator.

Shipments of commercial units for the nine months' fiscal period ending June 30 were 30,907 units, as compared with 21,515 last year, an increase of 43.9%.

**Birmingham Dealers Report
Continued Scarcity
Of Salesmen**

BIRMINGHAM, Ala.—A scarcity of salesmen continues to be a problem with electric appliance dealers in the Birmingham district. Classified advertising managers of newspapers report that the bulk of the "men wanted" classifieds is for appliance salesmen.

The scarcity is ascribed to several reasons, one being that with better business, persons who tried their hand at selling while unemployed have gone back to their jobs. Another is the tremendous increase in the number of dealers, and the publicity given to electrical appliances by the manufacturers and by the TVA in this territory.

Evans Electric Appliances, Birmingham dealer, finds that one way to hold salesmen is to carry a broader line of appliances, so that salesmen will have something to sell the year around with no seasonal slumps. This concern also zones its salesmen and protects each one on sales made in his zone.

J. W. Whatley, manager of the appliance department of the Pitzitz Dry Goods Co., reports he is losing salesmen right along. One attraction he has to offer good salesmen is a bonus on all sales over a stated amount, this usually amounting to a regular 10% commission plus a bonus of 2%.

Loveman, Joseph & Loeb has partially solved the shortage of salesmen by cutting out cold canvassing and requiring that salesmen work leads obtained on the floor and through satisfied customers.

**Detroit Dealers Moan Low Stocks of
Comfort Coolers in 100° F. Wave;
Public Storms Air-Cooled Places**

By Eleanor Blum

DETROIT, July 13—"Nothing ever like it before," is the way air-conditioning dealers are describing the flood of inquiries about air-conditioning equipment with which they have been swamped during the past week that sun temperature climbed above the 100° mark every day.

With the air-conditioning dealer outlets, business is so good that C. H. Lewis, sales manager of the air-conditioning department of R. L. Spitzley Heating Co., Delco-Frigidaire distributor, predicts that the effect will be felt even on next year's sales.

Spitzley has sold approximately 40 self-contained units for home and offices since Thursday, with a preponderance of them for bedroom installation, Mr. Lewis said. From 300 to 400 inquiries have been received in this period.

"Of course our direct-mail campaign which reached approximately 4,000 persons, plus local and national advertising, is helping us now," he stated.

**Frigidaire Salesmen Ask
'Is Your Refrigerator
Cold Enough?'**

DAYTON — "Is Your Refrigerator Cold Enough?" will be the question asked by Frigidaire salesmen and by newspaper, magazine, radio, and billboard advertising copy, with an attempt to get the answer through more than 1,500,000 cold gauges calibrated to register the safe and danger zones for proper food preservation, which will be distributed during the advertising campaign launched Monday, July 13, by Frigidaire Corp.

Physicians and scientists have found, declares Frank R. Pierce, household division manager, that in many cases people are victims of general malaise or even downright illness, the causes of which have been traced to improperly preserved food.

National advertising copy in newspapers, magazines, and Sunday supplements, and copy supplied to dealers, utilities, department and furniture stores for publication on a cooperative basis will all ask the question, "Is Your Refrigerator Cold Enough?" Statements from the United States Government bulletin that the temperatures of the food compartment in which food is stored must be kept at 50° or below if rapid development of bacteria is to be avoided, will be used in the copy.

As one of the major media used to reach homes, on June 26 Frigidaire (Concluded on Page 2, Column 5)

**Milwaukee, San Diego, & Sheboygan Dealers Launch Cooperative
Advertising Campaigns for Late Summer Sales**

MILWAUKEE—Weekly advertising insertions placed in each of Milwaukee's four newspapers throughout the month of July, and two additional series of broadcasts over local radio stations are central features in the current phase of the promotional campaign being sponsored by the Milwaukee Electric Refrigeration Bureau.

The cooperative advertising program conducted by the bureau during June included three quarter-page advertisements, each of which was inserted once in each of the four newspapers, from June 4 to 24.

First of the June insertions, appearing in the Milwaukee Journal, Wisconsin News, Sunday Sentinel, and Milwaukee Leader on June 4, 7, 9, and 10 respectively, featured a blow up of a formal invitation requesting the prospect's presence at the showing of the latest refrigerator models at the nearest dealer store. Background of the insertion depicted a scene in which a salesman is shown demonstrating an open refrigerator to two prospects.

"Change to electric refrigeration for convenience . . . for economy . . . for health," were the three points played up in the copy.

Headed "For 'his' sake," the second advertisement pictured a baby sitting (Concluded on Page 2, Column 4)

Although the company is having difficulty in keeping up with the installations, immediate attention is given to a sickroom case. Mr. Lewis says that individual rooms, where a patient's recovery is being retarded by the heat, have been conditioned by his company in an Ann Arbor hospital, in Harper hospital, in the Whittier Apartments, and in a private home here.

"We've never had anything like this," is the reaction of W. G. Nagel, Jr., vice president of Air Conditioning Corp., General Electric dealer. "We even have our bookkeeper working on sales," he said.

Mr. Nagel believes 25 sales will be closed today, and approximately 15 were made Saturday. Price, he states, is no factor with the public desperate for relief. The dealership is 36 hours behind on its installations.

Another member of Air Conditioning Corp. staff said that many orders were coming from persons who had built new homes and made provision for duct systems, but had not yet ordered refrigeration equipment. These sales, he averred, are crystallizing now.

At Kelvinator Corp., the telephone calls are coming in so fast that they can't all be answered, reports Frank T. Schreiner, engineer.

Room coolers are in the greatest (Concluded on Page 3, Column 1)

**Crosley Contest to
Spur Summer Sales**

CINCINNATI—Greatest sales contest ever introduced in the history of the Crosley Radio Corp. opened July 1 and will continue through Aug. 31.

A total of \$60,000 will be awarded to salesmen of Crosley dealers throughout the country. Seventeen Chevrolet cars are offered as first prizes—one for each of the 17 districts into which the country is divided for this contest—and with them will go a trip to the Crosley factory in Cincinnati for each winner, with all expenses of the trip paid by the Crosley Radio Corp. There they will be royally entertained and given their cars to drive home.

This is only part of the number of awards which will run into the hundreds. There will be 68 Crosley Shelvadors given to other winners; 102 Crosley console radios; 153 17-jewel Bulova wrist watches; and a Crosley "Fiver" radio to every salesman who sells eight Crosley refrigerators—but does not win a capital prize.

Prizes are to be awarded on a point (Concluded on Page 2, Column 1)

**Coolerator Executives Testify at
Duluth on History of Booklet;
Detroit Hearings Reveal New
Data on Food Preservation****Ice Box Manufacturers
Disclaim Responsibility
For Other Promotion**

By T. T. Quinn

DULUTH—Two top executives of the Coolerator Co., manufacturer of ice refrigerators, questioned last Friday by J. T. Welch, attorney for the Federal Trade Commission, furnished background information on their company and on the origin of the booklet, "Why Ice Is Best for Refrigeration," basis of the FTC case against the ice box manufacturer.

The men questioned were William F. Arndt, president of the Coolerator Co., and John H. Ganzer, vice president in charge of sales and advertising.

They were put under direct examination only, Respondent's Attorney Franklin Raber passing up the immediate chance at cross-examination in order to present Coolerator's full side of the story later.

The two Coolerator men were the only persons taking the stand at the hearing, and their testimony served to bring out the following salient facts:

1. That Coolerator sales have risen from 9,000 in 1932 to an estimated 85,000 units up to July 1 of this year—with anticipated sales of 100,000 units by the close of the current fiscal year.

2. That Coolerator's first use of the booklet began in 1931, when it was submitted to the company by an ice company, which had been making use of it about a year previously.

3. That about 5,000 of the booklets were printed in 1931; between 50,000 and 100,000 in 1932; and about 200,000 per year in 1933, 1934, and 1935.

4. That Coolerator discontinued publication of the booklet in the fall of 1935; that about 30,000 of the booklets have been distributed during the last six months, and only about 3,000 remain in stock.

5. That Ward Refrigerator Co., Los Angeles, is also known to have used the booklet in its promotional work during the last year or two.

6. That publication and distribution of the booklet is now in the hands of Ice Refrigeration Bureau, with offices in the Book Building, Detroit.

Considerable discussion also developed around a series of advertisements from a Kansas City newspaper, introduced by FTC Attorney Welch, (Continued on Page 6, Column 1)

**Low Temperatures Alone Do
Not Cause Dehydration,
Dr. Philipp Explains**By Winifred Hughes and
Eleanor Blum

DETROIT, July 14—When the Federal Trade Commission hearing on its complaint against Coolerator Co. re-convened Monday morning, Dr. L. A. Philipp, head of Kelvinator Corp.'s research laboratories, only witness questioned during the day, related that two weeks ago he had tested three Coolerator ice boxes, and that the results showed that in the ice box tested in a 90° F. room, the average temperature recorded was 52° and 53° F., and that in the box tested at a 110° room temperature, the average temperature recorded was approximately 55° F.

Tests on the Coolerator product, Dr. Philipp stated, had no connection with his being called as a witness in the hearing, but were conducted merely for his company's advertising department.

Called before Trial Examiner J. J. Keenan, the Detroit hearing was the third conducted to date on the FTC's investigation of the complaint case involving the booklet "Why Ice Is Best for Refrigeration," distributed by the Coolerator Co., manufacturer of ice refrigerators in Duluth, Minn.

Robinson Testifies Tuesday

Floyd W. Robinson, consulting chemist and bacteriologist with offices in the Michigan Theater Building here, was the only witness to be heard at today's (Tuesday) session of the Federal Trade Commission hearing.

Examined by Trial Attorney Welch, the chemist, whose background includes work as state analyst for the state department of agriculture, and food and drug inspector for the United States Department of Agriculture, said that since 1911, when he left the agricultural department, he has conducted several studies of refrigeration, first for Pittman & Dean (a Detroit ice concern), then for Absopure, and Utility Electric Refrigerator Co.

Most of Robinson's testimony was based on his observations in experiments conducted during January and February of 1936, with a Coolerator ice box and Norge and General Electric refrigerators.

Near Freezing Is Best Temperature

Included in his testimony was a denial of the statement contained in the booklet that the best temperature for the preservation of food is between 40° and 45°. He asserted that temperatures nearest freezing, or 32°, are the best refrigerator temperatures.

In his studies, Dr. Robinson said, he observed very little difference in the dehydration of the food in the three test refrigerators.

With the introduction by Attorney Welch of several charts drawn by Dr. Robinson to show test results which indicated a greater bacterial growth in foods in the ice box than in the electric refrigerator, Attorney Welch asked:

"How do you account for the wide divergence in the amount of bacteria in foods in the ice box and the iceless refrigerator?"

"The lower temperature in the iceless boxes."

'Iceless Refrigerator Superior'

Asked by Attorney Welch what his conclusion was as to the relative ability of the ice refrigerator and mechanical refrigerators to preserve food for household consumption, Dr. Robinson replied that he had no doubt of the superiority of the iceless refrigerator.

Several assertions in the Coolerator booklet were declared untrue by Dr. Robinson in his testimony, among them: that gases from the electric refrigerator are harmful to food, that the moisture content of the air is (Continued on Page 4, Column 1)

Crosley Dealers Get Details on Summer Sales Campaign

(Concluded from Page 1, Column 3)
basis, with points ranging from 3 to 7 on each refrigerator, depending on the model.

The "Hot Summer for Crosley Cold Refrigeration" prize contest is the name of the drive.

The entire campaign is organized like an army campaign with the general sales manager, Thomas W. Berger of the Crosley Radio Corp., in charge. Crosley district managers are field marshals.

Distributors will hold meetings of their salesmen, and these meetings will be attended in every possible instance by the Crosley field manager in the distributor's territory. Every possible sales help will be given to dealers' salesmen to enable them to sell Crosley Shelvador electric refrigerators, Mr. Berger stated.

Brickley Dealership Triples In Size in 6 Months

CINCINNATI—With more business in the last ten months than he's had at any time during the past four years, Fred Brickley, head of Brickley Radio Service, Crosley dealer at Tacoma, Wash., reported on a recent visit to the Crosley factory that in the last six months his company has grown from a three-man to a ten-man organization.

Mr. Brickley has been selling Crosley radios for 12 years, and started his own business in 1926. For the past three years he has also sold refrigerators of the same make.

Political Copy Features Cooperative Ads of San Diego Bureau

(Concluded from Page 1, Column 3)

"Palace of Electricity," a building erected and jointly maintained by the San Diego Consolidated Gas & Electric Co. and the Bureau of Radio and Electrical Appliances.

The advertising is in "cartoon" style, with a political motif. Under various headings such as "Planks in Our Platform," "Vote for the Cold Standard," "30,000 Vote 'Yes' on Electric Refrigeration," the copy exhorts the public to "check the platform plank by plank" and then "vote the straight ticket for electric refrigeration."

The "platform" is as follows:

- (1) Carefree, low cost operation.
- (2) Positive elimination of spoilage.
- (3) Lowest temperature constantly maintained.
- (4) Quantity buying of perishables at big savings.
- (5) Constant supply of ice cubes.
- (6) Delicious home-made ice cream sherbets and popsicles.
- (7) No muss, no fuss, no delay.

Baltimore Firm to Sell Copeland Line

BALTIMORE—The Peoples Electrical Supply Co. Inc., wholesalers of electrical supplies, major appliances, and radios, here, has been appointed distributor for Copeland Refrigeration Corp.

The firm will handle the distribution of Copelands both in Baltimore and in Washington, D. C. territories. Refrigeration activities will be under the direction of Gerson Dorman, executive and head of the firm.

New Detroit Showroom



Full-length show windows, high-powered night illumination, and modernistic trimmings characterize the big, new offices and showroom at 5840 Woodward Ave., Detroit, into which "Jim" Aitken recently moved his Aitken Radio Corp., Crosley distributorship in the Detroit area.

Ice Industry Votes Million Dollars for Advertising in '37

CHICAGO—Ice industry executives meeting last Thursday at the Sherman hotel here voted to spend \$1,000,000 on national advertising of ice refrigeration in 1937.

The 1937 appropriation represents an increase of more than 130% over the money being spent this year by the ice interests.

The advertising budget will be divided between newspapers, magazines and radio. A good share of the appropriation this year was spent on the "Parties at Pickfair" radio pro-

gram featuring Mary Pickford, which received considerable criticism from the industry as well as outside.

Ice industry executives also claim that ice companies will spend upwards of \$3,000,000 in local newspapers and through other media in their communities to advertise modern ice refrigerators.

At their sessions here executives of ice companies claimed increase in ice refrigerator sales ranging as high as 300%.

Cooperative Advertising Used by Milwaukee Dealers Association

(Concluded from Page 1, Column 2)

in a high chair, with a young mother skeptically looking at a bottle of milk, close by. Copy stressed the safety factor, with emphasis on electric refrigeration's retardation of bacterial growth.

"Electric Refrigeration looms large against a horizon of aggravating inconvenience . . ." was opening statement in advertisement three, in which an illustration of a giant refrigerator, towering over a cloud-and-building pierced skyline was central figure. Carrying the idea through to the end of the advertisement was a large-type statement calling electric refrigeration "The Biggest Thing in Modern Conveniences."

A six-page illustrated folder printed in blue, black and white also was issued as a tie-in with the newspaper advertising campaign. Selling features of modern refrigerators were highlighted in the folder.

Radio programs adding to the bureau's July promotions include a series of 33 broadcasts over station WTMJ, and a series of 56 broadcasts over station WISN.

Crosley Takes Up Option On Controlling Interest In Cincinnati Reds

CINCINNATI—Powell Crosley, Jr., president of Crosley Radio Corp., announced early this month that he had exercised an option from the Central Trust Co. for the purchase of the controlling interest in the Cincinnati Baseball Club Co.

About two years ago when the future of the Cincinnati Baseball Club was somewhat in question, Mr. Crosley was prevailed upon to interest himself in the club. This was done at that time through the purchase of preferred stock and thereafter through substantial loans to the company. Today's action is a confirmation of the control which has been exercised by Mr. Crosley for the last two and a half years.

Mr. Crosley made the following statement upon exercising the option: "At the time of my becoming interested in the Cincinnati Baseball Club company, I knew very little about baseball, but I have found the game quite interesting and fascinating and desire to become permanently allied with the future of baseball in Cincinnati."

Cold Gauges to Be Used In Frigidaire 'Cold' Campaign

(Concluded from Page 1, Column 2)

launched over a coast to coast network of 59 stations, Clara, Lu, 'n' Em, Ted Fio Rito and his orchestra and a group of singing and instrumental soloists in the "Frigidaire Frolic". The program will run for 13 Friday nights.

The overall advertising, according to Mr. Pierce, will be directed primarily at users of old fashioned means of refrigeration, but also at users of automatic refrigerators which do not produce safe temperature within reasonable operating cost.

The cold gauge is a small, enclosed thermometer so designed that it may be hung within a refrigerator. It registers the temperature in the refrigerator showing whether it is in the freezing zone, the safety zone between 32° and 50°, or above the danger zone of 50°.

A registration card must be filled out by the salesman installing the cold gauge or the floor man delivering one to store visitors. This card will carry, besides the name and address of the recipient, the type of refrigerator used, year purchased, and whether or not the housewife is a prospect immediately or in the future for a new refrigerator.

Window displays, show room exhibits, and literature will stress the story of mold and bacteria and their effects on health. Frigidaire's "proof" and "five standards" stories will also be featured.

Kelvinator Conditioned Coach Displayed by White Motor Co.

CLEVELAND—A "Dream Coach" built by White Motor Co. and air conditioned by Kelvinator is on display at the Great Lakes Exposition here to denote the latest in travel comfort.

Designed by Count Alexis de Sakhnoffsky, the coach's streamline construction embodies the principles of speed, smooth riding, and safety, the makers say.

Double windows, possible because of the air conditioning, eliminate drafts, strong winds, dust, and rain. Increased passenger comfort also makes possible longer distances between stops and a consequent speeding up of schedules.

MAKE MORE MONEY!

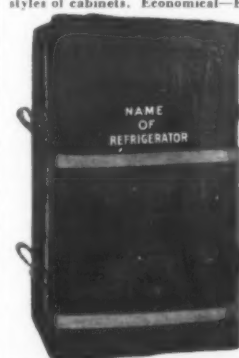
SELL REMINGTON PORTABLE TYPEWRITERS!

Remington Rand, world's largest and oldest typewriter manufacturer, offers you a surprising opportunity to make extra cash quickly—selling REMINGTON PORTABLE TYPEWRITERS—right in your community. Thousands of dollars of national advertising—our powerful free sales help—the famous "10 cents a day" payment plan, the great name of Remington Rand, will make it easy for you to boost your income with liberal commissions. Don't let inability to work full time or lack of previous experience prevent you from applying for this exceptional opening. Let me send you the full details now. Write today to E. H. Campbell, Dept. 65, Remington Rand Inc., 315 Fourth Ave., New York, N. Y.

THE MASTERCRAFT

ADJUSTABLE PAD AND CARRYING HARNESS FOR SAFE DELIVERY OF AUTOMATIC REFRIGERATORS

Pad and harness adjustable to many sizes and styles of cabinets. Economical—Efficient. Sturdily constructed, easily applied. Name of refrigerator attractively lettered on pad without charge.



Pad (Adjustable) \$9.50 ea.
Harness (Adjustable) \$6.00 ea.

Illustration at left shows type F adjustable harness and adjustable pad.

For other types, also individual carrying straps, write for full information.

BEARSE MANUFACTURING CO.
3815-3825 Cortland Street, Chicago, Illinois

20 QUALITY FEATURES

(No. 14)



Servel Valves Are Extra Large to Handle Large Volume at High Efficiency.

PUMPS AND PROSTRATION...

The human body succumbs to heat prostration when its "pump" fails to meet the added strain of hot weather. A refrigerating or air conditioning system may likewise fall down if its "pump" lacks the extra reserve demanded by soaring temperatures . . . Servel compressors are noted for their high volumetric efficiency which enables them to go right on pumping even though the air or water may be extremely hot. That's why Servel distributors are remarkably free from service worries during the "dog days". . . . There's still time for plenty of profitable business this season. A card or letter will bring details.

SERVEL

COMMERCIAL REFRIGERATION

SERVEL, INC. Commercial Refrigeration Division EVANSVILLE, IND.

This modern 33-acre plant is the home of Servel Commercial Refrigeration and the world-famous Electrolux, the Servel Gas Refrigerator



There is no Substitute for Experience

MAXIMUM RESISTANCE TO STRUCTURAL BREAKDOWN—ALSO

MANHATTAN V-BELTS

Internal heat eliminated by making impossible the chafing which generates heat. Rubber insulates each component part—holding together and cushioning each cord in the whiplash strength member, which is placed in the neutral axis area. Result—longer life . . . minimum stretch . . . noise eliminated. One trial and you'll always specify Manhattan.

THE MANHATTAN RUBBER MFG. DIVISION
of Raybestos-Manhattan, Inc.
45 Townsend Street Passaic, N. J.

Detroit Air-Conditioning Stocks Depleted By Rush of Orders during Heat Wave

(Concluded from Page 1, Column 3)

demand, with approximately a 50-50 division between the requests from homes and from offices, he believes.

He named price as the greatest handicap in actually closing the sales. "Home owners especially think that they should get something for around \$10," according to Mr. Schreiner.

Water coolers are also enjoying a sales increase during this spell, he said. Kelvinator is pretty well caught up on its installations, however.

Conditioned Air Corp., Chrysler Air-temp dealer, reports that the demand is for "quick" jobs in both homes and offices.

During the last four days, reports D. A. Newton, a dozen sales have been closed, and a number of prospects gained. Although this company is rushed on installations, it has been able to keep up so far, he said.

Two things Mr. Newton has noticed about the general public in the calls made recently: that most of the inquirers are not familiar with what air conditioning actually will and will not do; and that practically none of them are "beforehanded."

"They weren't prepared for this weather siege, but after it's passed, they will all decide that as long as they got through that they will wait until next year," he said.

Majority of Carrier Sales Are Commercial

H. V. Beggs, sales manager of Atmospheric Control Co., Carrier dealer, says that this weather has brought on an unusual sales condition. The season would ordinarily be expected to end around the first of July, he said.

"In spite of a cool June, we had a good business, and now, judging by the number of inquiries, July is going to beat June. It's unseasonable."

He attributes only two or three sales directly to this heat, although he said it certainly has spurred the undecided into action.

Unlike the others interviewed, Mr. Beggs said that most of his sales were of heavy equipment to theaters, dress shops, bars and night clubs, and ice cream shops.

The company has sold a few portables and reports that it has been unable to supply the demand for more.

Rushed to death on installations, Mr. Beggs says that it is almost impossible to get sheet metal work done.

Orders But No Machines

"We have 15 or so orders if we can produce the machines," declared Mr. Keller of Mechanical Heat & Cold, Westinghouse dealer.

"Our stock is exhausted, and the factory is completely sold out on more than one model," Mr. Keller said.

Several orders have come since Friday, most of them from wealthy homes, or for sick rooms. The bigger installations, Mr. Keller said, have been sold to factory offices.

Telephone calls, coming in at the rate of about 15 a day, are mostly from prospects who had considered air conditioning and decided against it, and are now reconsidering, he declared.

Mr. Levy said that the inquiries are in the ratio of about 80% telephone and 20% personal, with the questions "How long before I can have it? What will it do? How much will it do? How much will it cost?" taking precedence.

Although Caswell, Inc. is not getting a lot of unforeseen business in water coolers, Carl Sherman, commercial manager reports that the hot weather is closing a lot of sales that were dangling, and in general cleaning up their prospect cards.

A direct-mail campaign has had its effect on sales since about the fifteenth of last month, so that Caswell sales of water coolers are now 300% above last year's, Mr. Sherman said.

Since the middle of last month the company has made approximately 350 unit sales.

"Now all we need," said Mr. Sherman, "is more coolers. Our supply has gone, and so has the factory's."

Air-Conditioned Hotels Full

At the Dearborn Inn, only hotel in Detroit completely air conditioned, James I. Madden, room clerk, estimates that since Friday they have turned away from 250 to 300 persons looking for some relief from the heat.

"Those that are already in can't be budged out of the hotel, and our lobby has taken on a regular picnic air," he said.

Every available area has been turned into bedroom space and the Dearborn Inn management has exhausted the supply of extra cots and beds trying to accommodate some of the hundreds, most of them Detroiters, who are seeking a cool place to stay until the heat wave passes.

At the Statler hotel here where 40

of the rooms are air-cooled, the management is receiving approximately 100 calls a day that can't be filled, according to Manager J. Henry Pichler. Air conditioned meeting rooms also are in demand.

"People who were here when the intense heat started seem to be determined to stay until it's over. No one is moving out of the rooms; no wonder we have none to give the newcomers," Mr. Pichler said.

Many local people feeling ill from heat have to be turned away. The slightly higher price charged for these rooms is no deterrent, he reports.

"We've advertised these 40 rooms in the past by room pamphlets, but there's no necessity for that now—too many people seem to know about it," is his complaint.

"Come and bring your lunch" is the invitation to the public, issued by the management of a chain of 24 air-cooled theaters in Chicago. The theaters are being kept open all night.

Special Pullman Used On Sparton Radio Introduction Tour

JACKSON, Mich.—"The Sparton Great Chief," special pullman car, left July 3 from here on the start of a 7,000-mile merchandising tour to present Sparton radios and refrigerators to distributors.

A. T. Haugh, general sales manager, is in charge of the tour, accompanied by Scottie Smith, L. A. Robinson, Lou Pitts, and Harley Wall, district representatives who will join the tour when it reaches their territories.

Distributor meetings in the East will be held under the direction of E. T. H. Hutchinson, J. Raymond Dade, and Mr. Wall. In the southeastern territory, Mr. Hutchinson, Hugh Snyder, and Walter McPhail will be in charge of the meetings.

Among the new features of the Sparton radios which will be demonstrated on the tour is the photochromatic dial. Frequency figures in kilocycles and megacycles on this new dial are photographed on crystal clear glass, and the colorings which indicate

the different bands and frequency divisions are applied to the reverse side of this transparent glass dial and transmitted through it.

Because photography gives true definition, Sparton claims that by this method, the numbers and lettering, made in the correct size, are distinct and easily readable.

Other improvements claimed for the new line are tone expansion, centralized radio nerve system, radio log, all-wave matched aerial bands, altobasso control, separate antenna matching transformers for each band, shock proof chassis mounting, octal tubes, and gear and belt drive tuning system.

Ivey Reported Buyer of Warehouse Stock

CHARLOTTE, N. C.—General Electric appliances and radios were recently offered at reduced prices by J. B. Ivey & Co. here, who is said to have purchased the entire warehouse stock of L. W. Driscoll, Inc., G-E distributor for North Carolina.

Merchandise accumulated by the distributor on his retirement from the operation of retail stores and resale departments made up the stock, it is claimed.

Distributor of Zenith Uses Special Car to Show Dealers Radios

SAN FRANCISCO — Thompson & Holmes Co., Northern California distributor for Zenith radios, brought the new line product to the dealer's own community via a railroad car remodeled and decorated for the display of more than 50 new 1937 models.

Ranging from the smallest table model to the largest "stratosphere" model, the sets were mounted against modernistic silver backgrounds along the sides and both ends of the car, reports Robert E. Crane, secretary of the distributorship.

The "showroom on wheels" was routed over the lines of the Southern Pacific throughout northern California, stopping at various towns long enough to allow local dealers and their sales personnel to visit the car and inspect the new line.

Officials of Thompson & Holmes and of the manufacturer traveled with the car to explain the line and take the dealers' orders. Local power input enabled demonstrations to be made.

In AIR CONDITIONING — "it's the Early Bird"

Corozone Dealers Going to Town With New "KK"

The new Corozone Model KK is opening up markets for air-conditioning dealers everywhere. Priced at the sensationally low figure of \$249.50 (slightly higher west of the Rockies), the Model KK brings summer cooling and dehumidification within reach of everyone.

Now is the time to concentrate on the easiest selling cooling unit on the market today. Immediate profits are there, but best of all the Corozone selling season does not end with the passing of hot weather. Other units for other seasons, or for year-round service, fill out the line and make Corozone a 12-month business.



MODEL KK

A self-contained, portable room-cooling and air-conditioning unit at the remarkably low price of \$249.50*. This comes as the result of several years of scientific research and climaxes the sale of thousands of air-conditioning units.

Dimensions: 18" x 32" x 32". Weight: 225 lbs.

In every selling business, it is the man alert to Opportunity who reaps the Reward. Right now thousands of Dealers, Jobbers and Distributors are facing the greatest OPPORTUNITY OF THE AGE!

What have Refrigerator, Radio, Appliance and other Specialty Dealers been crying for?

SOMETHING NEW TO SELL!

Why? Their present overhead is fixed. Rent, Light, Telephone, Wages, etc., go on each month. Every dealer has hundreds of good loyal customers who already have bought everything he has to sell. They are fully equipped with refrigerators, radios, appliances, etc.

The Contacts have been made—the Customers are still there, ready to buy when they see something they want. What is there to sell them?

Corozone Air-Conditioning Units!—More Sales, Bigger Sales, Increased Profits.

Self-contained, portable Room Cooling Units — Commercial Cooling Units . . . for SUMMER SALE.

Compact, portable, humidifying units . . . for FALL, WINTER AND SPRING SALE.

Ionizing units in a variety of models to Purify, Deodorize and Revitalize . . . for YEAR-ROUND SALE.

Corozone meets every air-conditioning need—every month of the year.

Check These Features!

- ✓ Low Price
- ✓ Portability
- ✓ Proven Performance
- ✓ Minimum Investment
- ✓ Attractive Appearance
- ✓ No Installation Worries
- ✓ Flexibility of Application
- ✓ Discounts that Spell Profit
- ✓ Freedom from "Engineering"
- ✓ Complete to Meet Every Need

THE COROZONE AIR CONDITIONING CORPORATION

CLEVELAND, OHIO.

DISTRICT OFFICES

PHILADELPHIA
Avon Corporation
122 South 22nd Street

NEW YORK
The Corozone Air Conditioning Corp. of New York
11 West 42nd Street

SACRAMENTO
Western Air Conditioning Corp.
California-Western States Life Insurance Bldg.

Dr. Philipp Explains How Scientific Data Demonstrates There Is Less Dehydration in Electric Refrigerators Than in Ice Boxes

(Continued from Page 1, Column 5)
sapped up by an electric refrigerator, that water cannot be put back into foods, and that ice cubes contain the same matter as found in the drain pipe of an ice box.

A vial containing a sample of the residue from an ice box drain was introduced as an exhibit. Dr. Robinson stated that it contained a small amount of iron, mold, some hair, and a large amount of silica.

Cross-examination of the witness by Attorney Raber was postponed with the adjournment of the session by Trial Examiner Keenan until Wednesday.

Witness Contradicts Many Claims Made in Booklet

Giving a concise explanation of the operation of the mechanical unit used in both Kelvinator and Leonard refrigerators, Dr. Philipp then explained the construction and use of the hydrator provided in some Kelvinator and Leonard models, the types of refrigerants used in the boxes and how they were tested; the type of connections used in assembling the units, and tests applied to them and to the unit in its entirety.

Quoting from commission exhibit No. 1, the booklet, Trial Attorney J. T. Welch asked Dr. Philipp's opinion on the assertions that sulphur dioxide and chlorine are gases given off in a mechanical refrigerator.

To this Dr. Philipp answered that sulphur dioxide, if any is given off, is in such infinitesimal quantities as

to be negligible, and that it is "inconceivable that chlorine could be given off."

Dr. Philipp's testimony regarding the booklet statement that "It is a scientific fact that water will absorb 100% of all gases known to man at present time . . ." was:

"That is obviously a misstatement, because if it were true, we'd all be dead."

His verbal reaction, on reading the booklet claim that the gelatinous matter found in an ice box drain is similar in content to the matter found in the ice cubes of a mechanical box, was that "this is practically impossible; because the things formed in the gelatinous matter in the ice box drain are entirely different from that which is in ice cubes."

Describes Test as 'Unfair'

Next part of the questioning dealt with the test described in the booklet in which it is stated that after placing wintergreen oil, raw fish, garlic, onions, etc. in both a mechanical refrigerator and in a Coolerator, and sealing the two refrigerators for 24 hours, one would be unable to eat foods stored in the mechanical refrigerator.

In answering the attorney's question regarding his opinion of the test in the booklet, Dr. Philipp said that he did not consider that a practical nor a fair test.

Trial Examiner Keenan questioned the witness on this point. He said: "Is that in your opinion, Doctor, a fair test for comparison's sake when you use an insoluble oil in the test?"

Objecting to this question, Franklin Raber, respondent trial attorney exclaimed:

"I think the witness is usurping the functions of the examiner and of the commissioner in answering that question."

"I don't think so," said Mr. Keenan. Dr. Philipp reiterated his opinion that it was not a fair comparative test, and that, to his belief, it was impractical, putting materials in the refrigerator, which would never, under ordinary circumstances, be stored in it.

Questioned on Dehydration

Queried as to what factors govern the rate and extent of dehydration of foods stored in a refrigerator, Dr. Philipp's answer was that the rate of dehydration is determined by the temperature in which the food was stored, and the relative humidity of the air surrounding the foods stored.

"What tests have you made to determine the relative humidity in an ice box, and in a mechanical refrigerator?" asked Attorney Welch.

The witness replied that he had recently supervised the tests of three Coolerator refrigerators, and that he had conducted hundreds of tests on Kelvinator electric refrigerators.

Describes Tests on Coolerator

Asked to explain the nature of the tests on the Coolerator refrigerators, Dr. Philipp said that the refrigerators were placed in rooms having temperatures of 70° F., 90° F., and 110° F., respectively.

Data compiled on two of the Coolerator refrigerators during the tests, were outlined by Dr. Philipp. In the 90° room, he stated, a 6-ft. Coolerator was placed on test. A Friez temperature-recording instrument was placed in the box. This experiment was performed July 8, 1936.

A 100-lb. cake of ice was put into the cabinet of the refrigerator, but

the actual test was not begun until the cake had melted to 45 lbs.

Average temperature maintained in the Coolerator, as shown by the recording device during the several hours that the test was conducted, was between 52 and 53° F. The relative humidity was between 50% and 53%.

Second test, data for which was entered along with preceding data as commission exhibits, was made July 11, 1936. The same size refrigerator was placed in a room with a 110° F. temperature, and the recording instrument adjusted. Quantity of ice stored was approximately 50 or 60 lbs. Test was conducted from 10 a.m. one morning until 10 a.m. the next morning—in which time the average temperature recorded was about 55°, and the relative humidity, 46%, Dr. Philipp testified.

Comparative Tests on Kelvinator

"What tests on a comparative sized Kelvinator have you recently made?" Attorney Welch asked.

Specific test mentioned by Dr. Philipp was one on a KS-6 1936 model Kelvinator (6-cu. ft. cabinet), conducted about three months ago. Purpose of the test was to show the effect of room temperature on the refrigerator temperature.

The refrigerator was tested in rooms with respective temperatures of 70° F., 90° F., and 110° F. Run for 48 hours, the test in the room with a 70° temperature showed that the maximum temperature was 38° F., and the minimum, 27° F.

Results of other tests were: in the 90° room, a maximum temperature of 43° F., and a minimum of 41.1° F.; in the 110° room, a maximum temperature of 45° F., and a minimum temperature of 34° F., were recorded.

Average temperature maintained in mechanical refrigerators, Dr. Philipp stated, as proven both in preceding tests and in other tests, is between 35° and 45° F.

Referring to Dr. Philipp's testimony regarding dehydration, in which he had said that temperature and moisture content of the air, together, were the factors determining the amount of hydration, Trial Attorney Welch asked him to explain how that rate of dehydration can be applied so as to indicate the results.

Explains Vapor-Mixture Chart.

The doctor produced a chart, and said:

"I have a thermodynamic data sheet here for air, water, vapor mixture, in which the dry-bulb temperature is applied as the abscissa.

"This data shows the moisture content of the air between 35° F. and 100° F. for relative humidities between 0 and 100%.

"For example, at a temperature of 50° F. and a relative humidity of 50%, the moisture content is .0038 lbs. of water per lb. of dry air, and the moisture content of saturated air (air at 100% relative humidity) is .0078 lbs. of water per lb. of dry air. Therefore this chart shows that the moisture content of the air, at a relative humidity of 50%, is one-half the moisture content of saturated air."

Respondent Attorney Raber ob-

jected to this conclusion stating that Dr. Philipp was drawing conclusions instead of explaining the chart.

"There is no basis as to how this chart was compiled, as to what it is, whether it is some fellow's theoretical notion, or whether it is a chart of reading made, or whether it is something compiled in connection with an experiment, or whether it is purely theoretical," he added.

Trial Examiner Keenan answered to this objection: "I understood him to say that he prepared it."

"This chart," Dr. Philipp stated, "has been taken from the International Critical Tables, which is scientific data for this type of work all over the world. There are no industrial connections whatsoever. It is purely scientific information."

"And you prepared the chart yourself?" asked Examiner Keenan.

"Yes sir," the witness answered. "It is theoretical," Respondent Attorney Raber stated.

"It is not, it's experimental," Dr. Philipp answered.

The objection was then overruled, and the witness allowed to proceed with his explanation.

Trial Attorney Welch re-opened his questioning of the witness on the use of the chart, with this question:

Q. At a temperature of 45° F. and a relative humidity of 50% what will be the result as to the pounds of water?

Moisture Content Lowers with Temperature

A. Moisture content in that case would be .0032 lbs. per lb. of dry air. Q. Is that less or greater than . . . A. That is less.

"As a result of that comparison, what can you say as to the effect of lowering temperature on dehydration when the original relative humidity is the same," was the content of Attorney Welch's next question.

"I can say this much: as the dry-bulb temperature is lower, with relative humidity kept constant, the moisture content in pounds of water per pound of dry air decreases. From that thing alone we cannot draw any conclusions as to the rate of dehydration, but . . ."

"That is, you mean you cannot," Attorney Raber interjected.

"No one can," the witness replied. "You are not testifying except for yourself are you?" Raber asked.

"No, I am not," Dr. Philipp said.

"What conclusion do you draw from that?" Trial Attorney Welch then asked Dr. Philipp.

"That the moisture content of air at a low temperature for a fixed relative humidity is less," was the reply. "Now this chart can be used to show the effect of dry-bulb temperature and relative humidity upon the rate of evaporation or rate of dehydration of any material. This is a well known science. For instance, I have taken the moisture content of air at 50° F. and 50% relative humidity. Now let us assume that we have food containing water in this refrigerator at a 50° F. temperature and 50% relative humidity.

"The water from the food exerts a driving pressure equivalent to .0078 lbs. of water per pound of dry air

(Concluded on Page 5, Column 1)

MR. HOUSEHOLD REFRIGERATOR MANUFACTURER:

Whether you build

100

1000

10000

100000 refrigerators we

should like to have your Compressor, Condensing Unit or Evaporator business.

We are the Largest and the Oldest company which is primarily building refrigeration equipment for other manufacturers.

On the basis of our being better equipped to take care of your requirements we sincerely invite you to place your 1937 problems before us.

Wire or Write



UNIVERSAL COOLER

Refrigeration Specialists to the TRADE since 1922

DETROIT, MICH.

and in Canada Brantford, Ont.

"Hell hath no fury like a woman scorned" is a motto that should be framed and hung in front of every refrigerator designer's desk.



More and more housewives are looking at the "pretty" finish on a new refrigerator—but saying to themselves: "Yes—but how long will it stay that way?"

PORCELAIN ENAMEL INSTITUTE, INC. 612 N. MICHIGAN AVE., CHICAGO

PORCELAIN ENAMEL

Dr. Philipp Reports Results of Tests Made On Coolerator, Kelvinator & Leonard Refrigerators at FTC Meeting

(Concluded from Page 4, Column 5)

and it meets with a resistance of the water vapor in the air of .0038 lbs. of water per pound of dry air. So, therefore, the difference in those weights or concentration, that is, weights of water per pound of dry air, is the measurement of the driving force which tends to make the water evaporate into the air.

"So if we take that driving force, which is the difference of those two masses, and space it off on the chart, at a dry-bulb temperature of 40° F. we will find that the relative humidity at which the rate of loss of water from the food is the same as the loss of the water from the food held at 50° F. and a relative humidity of 50%, is approximately 23%.

"In other words, I might say from this chart that food carrying water vapor partially chemically combined, or in association with it, will not dry out any faster when stored in a cabinet at 40° F. temperature than in a cabinet of 50° F. at a 50% relative humidity," Dr. Philipp explained.

35 to 45% Relative Humidity

Trial Attorney Welch then asked: "In other words it takes both factors to determine the dehydration?"

The witness answered: "That is the point I am trying to bring out." "What is the percentage of relative humidity maintained in your refrigerator?" Dr. Philipp was then asked.

"Between 35% and 45%," he answered.

Construction of Hydrator

Points taken up at the beginning of Attorney Raber's cross examination concerned the construction and purpose of the hydrator used in some of the Kelvinator and Leonard refrigerators, whether or not the hydrator contained water, and if foods stored in it were submerged. Raber also asked if there were no air circulation in the hydrator, and the witness denied having testified to that effect.

"Then if there is air circulation, where does the air go to?"

A. From the top to the bottom of the hydrator."

Q. It never gets outside?

A. No, a very small amount might.

Q. What causes the circulation of the air in the hydrator then?

A. The difference of temperature in the top and in the bottom of the container.

Q. Then when the temperature is the same, the air won't circulate?

A. That's correct.

Purposes of Evaporator Doors

In replying to the next question, the witness stated that in the Kelvinator model selling for \$99.50, a hydrator is not provided as standard equipment. Raber then asked why Kelvinator places a door on the front of the cabinet containing the ice cubes. "For appearance," he answered. The door at the back of the ice cube cabinet is to prevent air circulation, he affirmed in answer to the attorney's next question.

Obtaining first Dr. Philipp's definition of food odors, Attorney Raber then queried him on the cold plate, which the witness had in previous testimony mentioned as being part of the unit equipment in a Kelvinator, stating that it was two sheets of metal, steam-welded together, through which the liquid refrigerant passes during the refrigerating process.

Frost Formation on Cold Plate

Queried as to whether frost is formed on the cold plate, the witness answered in the affirmative. "Then that's moisture, isn't it?" the attorney asked. "Solidified moisture," was his answer.

Raber then questioned the witness on statements made in his testimony involving the use of the hygrometric chart. He also asked if, in the tests made, the door of the refrigerator being tested had been opened during the test. The witness said that it hadn't.

Had he, the attorney questioned, ever made any tests to determine the number of times the refrigerator door is opened each 24 hours?

Answering in the affirmative, the witness said that the result of tests showed that the refrigerator door was opened about seven times during the preparation of each meal. This had been determined from tests made on 10 refrigerators, in his laboratory, the doctor stated.

Purpose of Coolerator Tests

"When did you get these two Coolerator refrigerators?" was the respondent attorney's next question.

"About two weeks ago, . . . but that had no connection with this hearing whatsoever," answered the witness.

"I didn't ask that, but you anticipated it, didn't you?" Receiving no answer, Raber next asked: "What did you get them for?"

A. We test all competitive refrigerators.

Q. Well, Coolerator has been running for the last five or six years. When did it first suggest itself to you to start testing this Coolerator?

A. As a matter of fact, we are only testing it for our advertising department.

Q. Well, they have been advertising for five or six years, have they not?

A. That is right.

Q. What is the occasion for your testing the refrigerators two weeks ago.

A. Simply for the reason that we wanted to get the information.

Tests on Other Refrigerators

Q. What others have you tested?

A. Frigidaire, General Electric, Westinghouse, etc.

Q. What other ice boxes have you tested?

A. No others.

Q. Is Coolerator the only one who makes an ice box?

A. I don't know.

When Raber next asked the witness when he had been notified that he was to testify in the FTC hearing of the Coolerator complaint case, the answer given was "About three weeks ago, Mr. Finnie notified me."

Whether Dr. Philipp had obtained the Coolerators to test for the case, was the substance of the next question asked by Attorney Raber.

"I did not," the witness answered.

Questioned on Test Procedure

Reverting again to Dr. Philipp's testimony on the tests which he had made, the attorney asked Dr. Philipp the exact time in the tests at which the recording instrument was put in, if the boxes were empty during the tests, and dates on which the tests were taken.

Stipulating the test made on the Coolerator placed in the room in which the temperatures was 110°, the attorney asked how long the test was run, if the door was opened during the test, and whether or not a standard type, or glass door was on the cabinet.

Dr. Philipp's answer to the first question was that the test had run from 10 a.m. until 10 p.m., that the box was placed in the room Friday night, July 11, and the test data taken the next day, not, however, until a temperature equilibrium was obtained. He said that the door was not opened, and that a standard type of door was on each Coolerator tested.

Refrigerant Questions

The refrigerants used in Kelvinator and Leonard refrigerators, were next brought up in the cross examination, the witness being asked what per cent of the units used Freon, and what per cent sulphur dioxide. He was also asked the physical properties of sulphur dioxide.

"When did you first see this booklet which is commission exhibit No. 1?" Raber asked, holding up the folder "Why Ice Is Best for Refrigeration."

"About six or 10 months ago; Mr. Finnie showed it to me."

Asked who Mr. Finnie was, he said: "Secretary of the Refrigeration Division of National Electrical Manufacturers Association."

The respondent attorney then tried, through questions, to obtain Dr. Philipp's retraction on his statements that the use of wintergreen oil, etc. in tests, constituted an unfair test. The witness held to his original opinion.

Source of Hygrometric Chart

Where had he obtained the hygrometric chart used while he was explaining the tests, was the next question put to Dr. Philipp.

"From the Kelvinator air-conditioning department," was the answer.

The chart was originally compiled for the department use, and a similar chart had recently been published in a leading technical scientific journal, Dr. Philipp further testified.

Winding up the long day's hearing,

An Added Market



Summer cottages form a 'plus' market for refrigerators. These two girls find a Westinghouse chest model handy for beverages.

Trial Examiner Keenan asked the witness his opinion on the statement (in booklet):

"The ice cubes frozen in a mechanical refrigerator contain the same things that the drain pipe of an ice refrigerator contains . . ."

That he had previously testified that this statement was not true, because the gelatinous matter in the drain was not at all similar to content of ice cubes, was the reply made by Dr. Philipp.

"Have you made any other tests on ice refrigerators," asked the trial examiner.

"This one I mentioned on the Coolerator is the only one which I have made during the last eight years," said the witness. "On this occasion, the refrigerators were merely sent into the laboratory to be tested, and we tested them."

2 Evaporators Used To Show Capacity of Kelvinator Machine

BUFFALO—Kelvinator dealers in western New York are making effective use of a unique method of demonstrating the reserve power of the company's 1936 electric refrigerators, developed by two of Kelvinator Corp.'s Buffalo branch men, "Cash" Lauffersweiler and Charles Landy.

By means of a second cooling unit, mounted on top of a model PK5-36 Kelvinator and connected to the regular cabinet compressor, the demonstrator shows that the condensing unit is not only powerful enough to freeze ice in the regular cooling unit inside the cabinet, but also has enough reserve power to freeze ice in the second cooling unit, out in the open on top of the cabinet.

It was found that a temperature of 42° F. was maintained in the food compartment of the cabinet, and freezing temperatures were maintained in all the trays of both cooling units, with room temperatures ranging from 70° to 75° F.

First public showing of the demonstrator was made at the Buffalo Electric Refrigeration Show. Later five evening sales meetings were held, at which dealers and salesmen in the territory were given information on its use. Most of the dealers in towns of 2,000 and over are now using the demonstrator units, reports W. E. Henning, Buffalo branch manager.

Landers, Frary & Clark Plans Six-Story Factory Addition

NEW BRITAIN, Conn.—Landers, Frary & Clark, manufacturer of Universal electric refrigerators and other home appliances, will build a six story addition to its factory on Ellis St., here, to provide for the expansion of its refrigeration and washing machine departments.

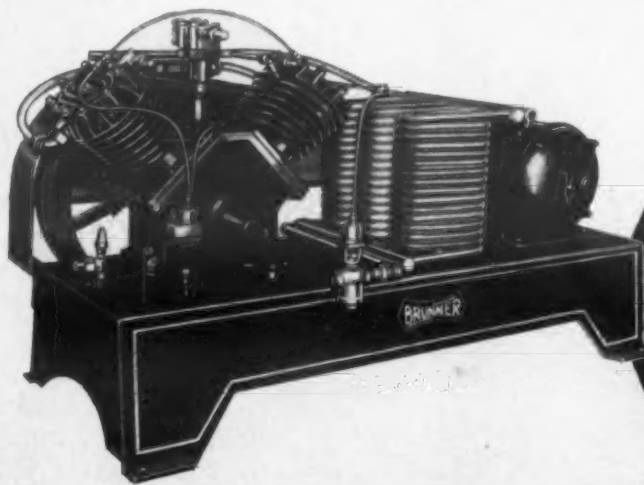
Of brick and steel construction, the addition will be 300x60 feet in dimensions.

OUR ENGINEERS HAVE DONE THE *Worrying* FOR YOU!

It takes plenty of worry to do a job real well. Brunner engineers are no exceptions. Long before any new design is put into production, Brunner engineers worry scientifically over its ability to live up to Brunner dependability. Tests and cross-tests . . . checks and re-checks . . . experimental abuse that crams years of performance into a few hours' time—it is a thorough

foreknowledge gained through this kind of "worry" that enables Brunner to build for the future . . . Brunner Refrigeration and Air Conditioning Units are today's leading quality "buy"—yet they are priced at a competitive level! Forty-seven condensing units, five compressors; air and water cooled; in a range from 1/4 H.P. to 15 H.P. Write for full details.

BRUNNER MANUFACTURING CO. * * * UTICA, N. Y., U. S. A.



**BRUNNER
CONDENSING UNIT
W-1000**
A 4-cylinder unit designed
for heavy duty, trouble-free
service . . . 10 H. P. motor
... water cooled.

BRUNNER CONDENSING UNITS and COMPRESSORS

Coolerator Executives Testify on Use of Booklet, Explain Construction of Box, & Trace Sales in Recent Years

(Continued from Page 1, Column 1) and objected to by Respondent's Attorney Raber on the ground that, since the name of the publication was not shown, there was no actual proof that the advertisements had actually been published in any newspaper. They were accepted by Trial Examiner John J. Keenan with the provision that they must be definitely identified before acceptance would be final.

Questioned on Advertisements

The advertisements were used by Mr. Welch in questioning Mr. Ganzer, Coolerator vice president, as to whether the cuts and phraseology used in them had previously been approved by the Coolerator Co. Mr. Ganzer identified three of the illustrations, but disclaimed any knowledge of the wording of the advertisements.

Coolerator had been financially interested in the campaign, he said, but had not been consulted regarding placement of the advertisements or their subject matter.

Arndt Reports Sales of 85,000 Coolerators in 8 Months

Called first to the stand by Trial Attorney Welch, Coolerator President W. F. Arndt gave as his fellow officers in the organization J. H. Ganzer, vice president; C. P. Grady, secretary; and R. H. Sanford, treasurer.

He distinguished between the two organizations Coolerator Corp. and Coolerator Co., saying that the first named was the manufacturer, and the second the sales agent for Coolerator products.

His association with Coolerator, he said, dated from 1928, when the company was known as Duluth Refrigerator Co. The name was changed to Coolerator in 1930.

25 Salesmen Employed

At present, he testified under questioning by Mr. Welch, the company has 25 salesmen working for it in the United States, their principal contacts being with ice companies and furniture and department stores. Between 95 and 98% of sales, however, are made through ice companies, he said, the other two outlets being of relatively minor importance.

Warehouses are maintained by the company in the following large

cities: Atlanta; Bethlehem, Pa.; Boston; Dallas; Indianapolis; Kansas City; Los Angeles; Memphis; Tampa; Oakland, Calif.; and Seattle. These are bonded warehouses, he emphasized, not owned by the company, and are maintained for rush delivery service only.

Most deliveries, he stated, are made direct from Duluth in carload lots—with between 70 and 100 refrigerators comprising a car.

Four sizes of the company's output, Mr. Arndt said, are adaptable to commercial use. Bulk of the company's business, however, is in household units, only about 15% of the 1934 and 1935 sales falling into the commercial classification. The 1936 ratio, he added, may be lower, due to larger foreign and Canadian business in the smaller models.

Coolerator Sales by Years

Sales by years, Mr. Arndt said, since 1932 had been approximately as follows:

1932—9,000; 1933—15,000; 1934—35,000; 1935—70,000; 1936—85,000 (six months), with 85,000 for the first eight months of the fiscal year, and anticipated sales of 100,000 units by the end of the period.

Asked by Mr. Welch whether Coolerator had made any basic changes in design of the units since their manufacture by Duluth Refrigerator Co., Mr. Arndt replied that there had been none, to his knowledge—that improvements and refinements in the system and in insulation, breaker strips, and gaskets had accounted for the most of the changes.

Air Chamber Movement

The principle of air chamber movement—Coolerator's so-called "air-conditioning" feature—was not among these innovations, Mr. Arndt asserted.

Asked to amplify on this feature, Mr. Arndt explained that Coolerator's arrangement of ledges on which the ice cake rests permits air circulation under the cake of ice only—not over it. Air in the refrigerator, he said, is cooled by constant contact with the cake of ice.

Average icing of the refrigerator, he added, is 100 lb. This will last from four to seven days, he claimed, depending on weather conditions.

Air cannot go over the cake of ice, he said, unless the ice is allowed to get "way down" in the chamber—down far enough, in other words,

that it does not fit on all sides of the ledges which hold it up from the food chamber.

Air coming down, Mr. Arndt said, passes between the drip pan and the ice. Water flows from the drain pipe to the trap. This trap is made of glass and copper, in the shape of a bell—and serves to keep air from entering the food chamber. From the trap, the water flows down to the drain system, or to a pan underneath the ice box.

Construction of Ledges

Interior of the ice chamber, Mr. Arndt added, has been arranged with the back ledge heavier than the front, to allow for a more even meltage of ice, and consequently less opportunity for one or more of the ledges to become uncovered.

Prior to examining the witness concerning origin of the booklet, Mr. Welch introduced as Commission's Exhibit 10 a copy of Coolerator's portfolio on sales and merchandising aids, which Mr. Arndt identified as such. The portfolio contained a description of the booklet, "Why Ice Is Best for Refrigeration," crux of the FTC's case against the ice refrigerator concern.

Turning quickly to the matter of the booklet, Mr. Welch asked the witness when he had first had knowledge of its existence.

Booklet Used First in 1931

The booklet had first been called to Coolerator's attention, said Mr. Arndt, in 1930, by an ice man; and the company had been asked to take it over and reprint it as a sales help. It had been in existence about a year prior to that time, Mr. Arndt stated.

Question. When did you first publish copies of the booklet?

Answer. In 1931.

Q. How many copies were published?

A. I don't know the exact number. Mr. Ganzer is better acquainted with that phase of the business than I am. I'd say about 150,000 a year.

Publication Discontinued in 1935

Q. Are you still publishing the booklet? A. We discontinued publication in the fall of 1935.

Q. Do you still have copies of the booklet on hand? A. There may still be some on hand now. But they are just what's left of the last printing.

Q. Were any editorial changes made in the booklet when you started publishing it? A. I don't know—Mr. Ganzer can tell you more about that.

Q. How was the booklet distributed? A. It was sold to dealers along with the rest of the merchandising and advertising material described in the portfolio.

Q. You say the booklet was distributed to dealers beginning in 1931? A. Yes.

Q. Did you bear any of the cost of its publication? A. No. The price to dealers covered the full cost of the booklet.

Dealers Paid for Booklets

Q. Were any special efforts made to distribute this booklet? A. As I recall, it was sold to dealers only on order, along with the rest of our sales and advertising material.

Asked by Mr. Welch whether or not the booklet is still being published, Mr. Arndt replied that it is—by the Ice Refrigeration Bureau, with headquarters in Detroit. Issuance and distribution of the booklet are now in charge of this organization, he said.

Question. Was the booklet used in presenting the question of ice refrigeration directly to dealers?

Answer. I can't say, of my own knowledge.

Q. Were any such cases ever reported to you, then? A. None that I remember.

Prices Range from \$30 to \$600

Mr. Welch next sought of Mr. Arndt information as to the price range of Coolerator units.

Retail range of prices for the complete line, including commercial units, is between \$30 and \$600, Mr. Arndt replied. Range of the household units is between \$30 and \$175.

As to sales procedure, Mr. Arndt said the household units are largely sold on the 10-day free trial plan, with 12 months to pay, in the event the prospect decides to keep the unit.

Competitor's price range, Mr. Arndt said, is about the same as Coolerator's.

Asked next if he knew of any competitors who were using the "Why Ice Is Best" booklet in their sales work, Mr. Arndt said he understood that Ward Refrigerator Co. of Los Angeles was using one similar to it. He knew of no other, he added.

Questioned on Dehydration

Then he was asked whether he knew it to be a fact that food kept in a Coolerator showed very little loss from dehydration. He couldn't tell the exact amount of dehydration, he replied, but he knew it to be very little—because he had noticed it in the Coolerator in his own home.

Trial Examiner John J. Keenan next took up questioning of the wit-

ness, asking him regarding the make-up of the "Why Ice Is Best" booklet, a second copy of which was in the hands of Respondent's Attorney Raber.

Cover on this booklet was of different design than the one placed in evidence by Mr. Welch, and Examiner Keenan asked whether there had been more than one change in cover design.

Mr. Arndt replied that there had been two or three changes in cover design of the booklet.

Q. Were any changes made in contents of the booklet? A. No.

Q. Were sales of the booklet solicited by salesmen? A. Yes, with other company literature.

Q. About this matter of dehydration. You said your ice box showed very little of it. Did you make any tests of this, of your own? A. No. I didn't make any of my own.

The witness was then turned over to Mr. Raber for cross-examination. Mr. Raber asked the examiner if he would be allowed to question all of his witnesses at one time later, and being told that he would, declined to cross-examine.

Ganzer Gives Data on Publication of Booklet

Mr. Ganzer, Coolerator's vice president in charge of sales and advertising, was then called to the stand by Mr. Welch, and testified that his association with Coolerator dated back to 1921, when the organization was known as Duluth Show Case Co. Change of name to Duluth Refrigerator Co., he said, was made in 1928.

His first knowledge of the "Why Ice Is Best" booklet, he said, was in 1931. He had been away when the booklet was called to the attention of the company, he added, and the first printing had been made before his return.

Reports Number of Books Printed

Printing of the booklet had first been made by an ice company, he said, and later Coolerator had been asked to take it over. The company had printed copies on hand in March, 1931, he remembered.

In response to questions by Mr. Welch, Mr. Ganzer said that about 5,000 copies of the booklet had been printed in 1931; between 50,000 and 100,000 in 1932; about 200,000 per year in 1933, 1934, and 1935; and that printing had been discontinued last fall.

Q. How did you distribute the booklet?

A. We sent out samples to dealers, explaining that we had copies on hand if they wanted some for their salesmen. We originally intended that the booklet be for dealers only, but our dealers asked for more, so we printed them and sent them out on order.

Use of Books by Dealers

Q. How were the booklets used by dealers?

A. They were mailed out, or distributed by drivers and salesmen. Some were given out at exhibits—but not many, since the cost would have been too great.

Q. Were the booklets used by other than ice companies?

A. Some few. Not very many.

Q. How were the booklets sent out? Was the Coolerator name used in connection with them?

A. We imprinted the customer's name on the booklets, as many as he ordered. They went out under his name. In small orders, the space was left blank for the dealer to stamp in his own name.

As advertising manager of the company, Mr. Ganzer said he had noticed advertisements of competitors in newspapers, trade papers, and magazines. He only noticed the ones he "happened to run across," he said—he had made no particular study of this advertising.

Had he noticed other competitors' use of the "Why Ice Is Best" booklet? Yes, in the last year.

Ice Bureau Has Copies

Where had those copies been obtained? Through Ice Refrigeration Bureau, Book Building, Detroit, Ben Steers, manager. Any ice refrigeration dealer may obtain copies of the booklet from that source.

What competitive ice refrigerator company had been using the booklet? Ward Refrigerator Co., Los Angeles. Obtained through Ice Refrigeration Bureau? Yes.

How did Ice Refrigeration Bureau obtain the rights to print the booklet? The Bureau asked if Coolerator had any objections to its printing and distributing the booklet, and was told that there were none, since Coolerator considered the booklet public property.

Coolerator's last printing of the booklet, said Mr. Ganzer, was in the fall of 1935. There are at present about 2,000 or 3,000 copies of the booklet in stock. Perhaps 30,000 orders have been filled in the last six months. Coolerator will make no more reprints, regardless of requests.

Queried on Other Advertising

Dropping his questioning concerning the booklet, Mr. Welch asked whether the same assertions were made in other Coolerator literature. Mr. Ganzer replied that yes, they were somewhat the same, but that they were phrased differently.

Amplifying this at Mr. Welch's request, Mr. Ganzer said that what he meant was that all Coolerator advertising stressed the claims that there were no odors in the food compartment, less drying out of food, no odors in ice cubes, no covered dishes to preserve crispness, etc.

Kansas City Ads Introduced

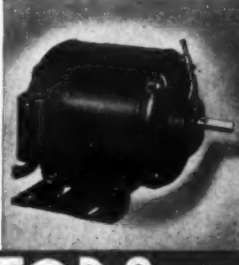
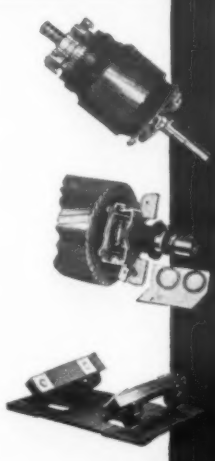
Mr. Welch then showed Mr. Ganzer copies of six Coolerator advertisements, which he said had been clipped from a Kansas City newspaper, and asked him whether he could identify them, both as to illustrations and reading matter. Mr. Ganzer identified three of them as containing cuts furnished by the Coolerator Co., but disclaimed any knowledge as to from what source or sources the reading matter might have been obtained.

"To what extent," he was asked, "do you cooperate with dealers in their advertising programs?"

"In a limited way only," he replied.

(Concluded on Page 7, Column 1)

HERE'S WHY WAGNER MOTORS ARE QUIET

- 1 • Rotor is dynamically balanced to eliminate vibration and noise arising therefrom. The number and the dimensions of rotor slots are carefully chosen to minimize magnetic noise.
- 2 • Cork Thrust Washers located at both ends of the motor cushion the free-end movement of the rotor thereby preventing noise.
- 3 • Resilient Mounting, interposed between motor frame and base, is made up of layers of rubber and steel vulcanized together — is elastic enough to absorb the small amount of vibration remaining in the most carefully-designed motor.
- 4 • Steel-backed Babbitt-lined Bearings are diamond-bored to secure bearing clearances small enough to avoid any possibility of excessive play and at the same time have ample clearance to afford a liberal oil film between shaft and bearing.

There are many other features of Wagner small motors, contributing not only toward quiet operation, but toward such essentials as dependability, performance, simplicity, and appearance. These features are fully described in Wagner Small Motor Bulletin 177, which will be sent upon request.

MS336-2J

Wagner Electric Corporation
6400 Plymouth Avenue, Saint Louis, U.S.A.

MOTORS TRANSFORMERS FANS BRAKES

Build Solidly for the YEARS AHEAD

with

Copeland

Commercial Refrigeration



● YOU can make more progress building solidly for the years ahead with this big Copeland line of precision-built commercial units. Every sale stays sold. Copeland has many selling features, because Copeland precision-manufacturing standards are the highest in the industry. Into every Copeland unit, we build extra stamina, extra smoothness, extra economy and extra years of trouble-free performance. These factors mean much to distributors who are in business to stay. A few Copeland territories are available. Write for details.

COPELAND REFRIGERATION CORPORATION
Manufacturers of a complete line of Household and Commercial Refrigeration
Holden Ave. at Lincoln . . . DETROIT, MICH.

Copeland

DEPENDABLE Electric REFRIGERATION

Advertisements Are Entered as Evidence In Coolerator Case

(Concluded from Page 6, Column 5)

"and then only in territories where we feel our help is really needed and will prove worthwhile."

Cooperated in Campaign

"Did you cooperate with Kansas City dealers in their campaign?" "Yes."

"To what extent?" "We were interested in a financial way only. We furnished some money and mats, but there was no agreement that the mats had to be used. The mats contained the imprint of the refrigerator, or copy, or both—but there was nothing stipulated as to the manner in which they were to be used."

It was a cooperative campaign, Mr. Ganzer added, in which Coolerator furnished some money—nothing else. Mr. Welch called his attention to the use of the Coolerator name at the bottom of the advertisement, and Mr. Ganzer said that the matter of using the Coolerator name in the campaign never came up when plans for it were being discussed.

The phraseology of several of the ads was next pointed out by Mr. Welch, who asked Mr. Ganzer whether or not some of the statements were not taken from advertisements originally prepared by Coolerator. Mr. Ganzer replied that he couldn't say if the phraseology was the same or not.

Identifies Prepared Copy

Mr. Welch then had the witness point out several prepared Coolerator ads in the company's big portfolio. Mr. Ganzer did so, adding that these had been prepared and sponsored by the company.

At this point Respondent Attorney Raber objected to the whole proceeding, on the ground that there was no proof that the advertisements being introduced as evidence by Mr. Welch had ever appeared in any newspaper. This objection was overruled by Examiner Keenan, and Mr. Ganzer then checked the three he had previously identified, with the stipulation that Coolerator had supplied the cuts only, and not the reading matter.

Accepts Three Ads as Exhibits

Examiner Keenan next took over the questioning, and after Mr. Ganzer had asserted that he was neither chemist nor engineer, asked if he had noticed the wording in the three advertisements in which Coolerator cuts were used.

"I have now," Mr. Ganzer replied.

Q—Were the ads submitted to you before they were published? A. No. Q. Is some of the phraseology used in them the same as in your prepared ads? A. I couldn't say. Our advertisements may say essentially the same things, but in a different way.

Examiner Keenan then ruled the advertisements (Commission's Exhibits 11, 12, and 13) admissible, subject to verification of their publication.

Cross-examination of this witness was also declined by Mr. Raber.

Arndt Recalled to Stand

Recalled to the stand, Mr. Arndt was asked by Mr. Welch to show, by a diagram drawing, what the Coolerator ice compartment looks like from above. Mr. Arndt made the drawing, explaining at the same time the system by which the ledges are employed to keep air from passing between the food and ice compartments.

When the ice supply gets very low, he said, the ledges are open and air may pass from one compartment to the other.

Here Mr. Raber took a hand, and had Mr. Arndt explain that a space between the ice cake and the ledge would not appear unless the ice melted down under 2 inches. If the ice box were re-iced reasonably often, Mr. Arndt said, the ledges would not show.

140-Lb. Capacity

Capacity of the ice compartment, Mr. Arndt explained, is actually about 140 lb.—so that there may be as much as 30 or 40 lb. remaining in the cabinet when a new cake is inserted.

"With proper icing, then, there should be no occasion for the ice to melt away from the ledges," Mr. Raber asked. "Yes," was the reply.

"And there is proper refrigeration if the ice is 3 inches thick, or thicker?" "Yes."

"But there would be an air space in the ice chamber as the ice cake melts down?" Examiner Keenan queried.

"Yes—a dead air space. There would be no air movement unless one of the ledges was uncovered."

But there would be a rising of the temperature in the box, wouldn't there?" "No. Not until the ice cake melted down almost to nothing."

Ralph Cameron Declares Survey Shows Department Store's Profit On Refrigerators Averages 4.8%

CLEVELAND — Figures compiled from questionnaires sent to department stores by Ralph C. Cameron, assistant sales manager for General Electric kitchen appliances, shows that department stores make a profit of 4.8% on their electric refrigerator business.

The questionnaire was sent out as a result of a question raised at the 193rd General Electric Merchandising Clinic held here this Spring, which was attended by department store executives from various sections of the country.

Analysis of the answers was made by Mr. Cameron in a letter sent to David Edelmuth of Associated Merchandising Corporation. The letter follows:

"Does electric refrigerator merchandising show a profit?"

"Remember the question? You put to me at the General Electric Merchandising Clinic in March of this year and I promised to get an answer for you based on facts. Here is the answer.

4.8% Profit on Refrigerators

"Based on performance figures supplied by retailers who were present at that meeting, I find that they show a profit of 4.8% on their electric refrigerator business.

"Most anyone can get some tall stories out of tall figuring, so I'm going to tell exactly what I did and how I did it. You probably remember that I promised to prove my contention that refrigerator sales do make a profit with the retailers' own figures and with their own system of accounting.

"With that thought in mind I drafted a questionnaire asking for the same merchandising statistics and operating expenses of the refrigerator department as included in the Controllers' Congress Reports. This questionnaire was sent to about 180 department stores who were represented at the clinic. Approximately 100 replied.

Fifty Had No Breakdown

"Fifty of those answers merely informed me that their accounting systems did not provide for a breakdown for electrical appliances, but included them all in the housewares division. Knowing that we were not interested in the selling intricacies of wash baskets and whisk brooms, kettles and can openers and the thousand and one items classified as house wares, they deservedly asked to be excused from the survey.

"That narrowed the replies down to fifty. Of these, about twenty-five reported that they did not sub-divide their electrical appliance statistics according to the individual appliances, but had all major appliance data bulked together. (Surely these stores are not in a position to say they are not making money on electric refrigerator sales, are they, Dave?)

"That left me detailed and comprehensive reports from 25 stores of various types and sizes, located throughout the country, on which to base my study. First, an examination of the individual showings of each of these stores showed that 23 of the 25 actually made a profit, according to the factual data supplied by them. By comparison with the other 23, I found that the two stores which reported a loss carried an excessively high administrative charge against the department which represented the difference between profit and loss.

"Be that as it may, I accepted the figures as they were and included them in the average compilations. The profit of 4.8% noted in the first paragraph is the average of the 25 department stores reporting. Their figures averaged a gross margin in relation to sales of 34.8%. In addition, they had a sundry income consisting of profits in financing of 2.4%. Inasmuch as this was produced by the investment, I added it to the gross margin to make a total of 37.2%. The total operating expenses for the 25 stores average 32.4%, so that by simple subtraction, we again arrive at the profit of 4.8%.

Other Statistics Reported

"Many other significant figures were revealed in the survey and with all of us interested in the same goal, that of improving refrigerator merchandising, I'm sure that they will stimulate some constructive thinking on all sides. For that purpose, and with no more ado about profit, I'll put down the averages on merchandising statistics and operating expenses as reported by the 25 stores:

Merchandising Statistics	
% cumulative markon.....	36.5%
% to sales markdowns (at retail) ..	3.2
% to sales stock shortage	
% to sales of parent dept.,	
workroom or service net cost..	9.7
% to sales, gross margin	34.8

% to sales, sundry income (finance charges)	2.4
Number of stock turns	17.2
% sales to total store	1.3
\$ sales for year per sq. ft. of selling space	\$157.00

Operating Expenses

Administrative	
% to sales	5.3
Occupancy	
% to sales, fixed plant & equip. cost	1.8
% to sales, total occupancy	2.2
Publicity	
% to sales, newspaper space costs—overall 4.2 your cost 2.1..	4.2
% to sales, total publicity	5.8
Buying	
% to sales	3.6
Selling	
% to sales, selling salaries, inc., commissions to salesmen	8.2
% to sales, general selling expense	1.1
% to sales, selling supervision	3.3
% to sales, delivery expense	2.9
% to sales, total selling	15.5
% to sales, total operating expense	32.4
Profit	4.8%

"Again, in the spirit of constructive analysis, I consider the 3.2% markdowns and 3.7% service costs as high. The former is due probably to duplication of lines and other merchandising pitfalls induced by an eager search for promotional models. The same practice can lead to higher service costs. Both figures could be reduced if the retailer would confine his operations to an established line or two of quality refrigerators.

"Along the same line of thought, I am wondering if that 17.2 turnover

rate, which is already high in the experience of department stores generally, could not be greatly improved by restricting buying operations somewhat. By confining a store's stock to one complete line of six models, for example, I believe the turnover could easily be doubled. And who would not be interested in doubling the net profit?

Sales Per Square Foot

"Next comes the rather startling figure of \$157.00 of sales for every square foot of floor space devoted to electric refrigerators. According to the Controllers' Congress figures, there are only two to four main floor departments which account for more than \$100 per square foot in the larger stores and none produce as much as \$157. Does that not raise the questions as to whether refrigerators should occupy a main floor location?

"A glance at the figure showing the percentage of refrigerator sales to the total for the store, an average of 1.3%, would seem to throw some light on that question. To my mind, a department as productive and as important as electric refrigerators should account for 2.5% of the business.

"An analysis of the items that make up operating expenses can also give rise to numerous discussions on the fundamentals of appliance merchandising. It should be remembered that the 5.3% for administrative expenses is inflated by the inclusion of the reports from the two stores which were previously shown to carry excessive charges in this bracket, when compared with the 23 other stores. Therefore, the goal of an efficiently operated store should be somewhat below that, if this cross-section is taken as a guide.

"Further down on this list are two executive expense items which are sure to raise a storm of controversy. Without desiring to impugn the

necessity or importance of the buyer for a refrigerator department, one can with all justice question the 3.6% expense for buying. Certainly, the duties of such a buyer, who has only to choose a few lines a year and who has practically no stocks to keep up, cannot be compared with the buyer for a fashion department who must shop dozens of resources, must keep abreast of style changes and must maintain a proper balance in sizes, assortments and styles in his stock. And yet they rate about the same percentage of compensation, according to the Controllers' figures.

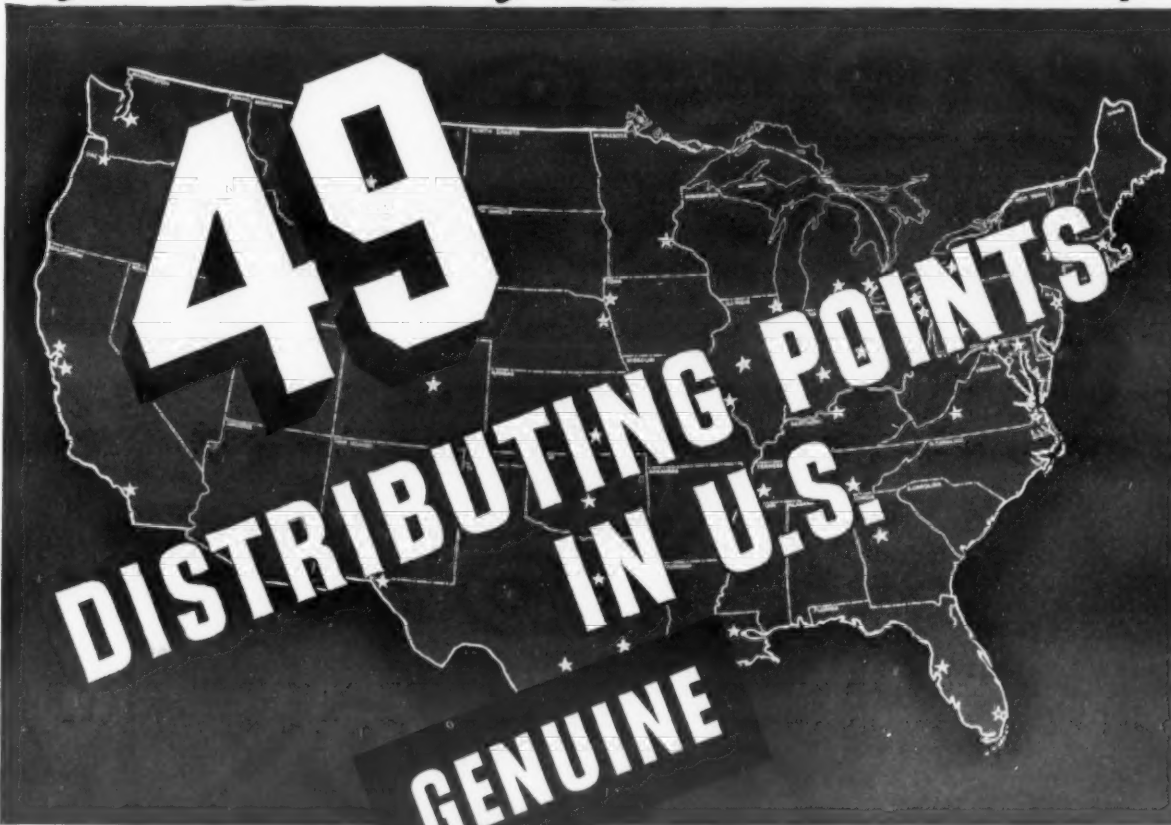
"The same cold and unbiased comparison can be leveled at selling supervision getting 3.3% of sales in compensation. Considering the presence of administrative, buying and supervisory divisions, might not some mischievous soul inquire, 'Who watches who?' Let me out of this argument, Dave, just let the figures speak for themselves.

Suggests Better Commissions

"If adjustments seem advisable, I would recommend that the salesmen's compensation, listed at 8.2% in this survey, be raised to 10% if you want to see some real returns for your money. This and other observations which do not have root in the actual figures presented in this letter are not mere theory either. They are culled from sound experience, accumulated by the operations of 56 of our distributors who have had retail departments during the past nine years.

"In conclusion, please let me point out that not only did this survey show that department stores can and do make a profit in merchandising electric refrigerators, but there is considerable evidence that the profit reported can be raised to a higher figure if stores will tackle the problem with the same vigor that has made them the outstanding distributors in so many other lines."

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Please send me catalog and new low prices on Genuine Frigidaire Precision-Built Parts.

Name
Address
City State

Around the World

With George F. Taubeneck

Mr. Taubeneck, editor of the NEWS, is scheduled to arrive in Detroit about Aug. 1, completing his trip around the world in approximately seven months. He left Detroit on Jan. 8.

He is now in London and will sail from Southampton July 25 on the *S. S. Empress of Britain*, arriving in Quebec, Canada, July 30.

In a letter written July 4, just received from Berlin, George indicates that the impending Olympic games make it very difficult for him to concentrate on refrigeration and continue his journey. (George was Sports Editor of the *Daily Illini* when he was a student in the University of Illinois.

Apparently he has been avidly reading the U. S. newspapers and is getting worried about the state of the nation (particularly in the region of Detroit) during his absence. He writes:

"What with the fall of Joe Louis, the disappointing showing of the Tigers, the collapse of the Vandenberg-for-President boom, the Michigan Black Legion revelations, and the renewal of the plagued Grunow controversy, it appears as if I had better hurry back to Detroit and get things under control again!"

Calcutta, India

Calcutta Monopoly

Frigidaire seems to have the refrigeration situation pretty well under control in Calcutta. As a matter of fact, Refrigerators, Ltd., Frigidaire distributor in that city, had a virtual monopoly of the business until quite recently.

Kelvinator has begun to cut in a bit, and so has HMV. But Frigidaire is still well in the lead.

Refrigerators, Ltd., first took on the Frigidaire line in 1925. Total sales that initial year numbered 12. Last year they topped 600. (It might be noted, apropos of something, that this firm pays for two subscriptions to *ELECTRIC REFRIGERATION NEWS*.)

In all, this concern estimates that in the Calcutta area 5,000 household refrigerators, 600 commercial jobs, and six complete air-conditioning installations have been sold. Frigidaire has sold far more than all other makes combined.

E. G. BROMBY is managing director, G. S. MILNER director, and P. L. MUKHERJEE the No. 1 salesman of this concern. Four other salesmen scour Calcutta for business.

An associate company of Refrigerators, Ltd., Allen Berry, Ltd., has branches in Lucknow and Dibrugarh. Through these branches and their sub-agents Frigidaire is sold in those territories.

Milner himself conducts the retail operation in Delhi, with sub-dealers. In addition to these, 14 independent dealers have been awarded the Frigidaire franchise. Altogether, Refrigerators, Ltd., has 32 retail outlets.

Sell on Service

Having enjoyed such complete control of the business for so long, Refrigerators, Ltd., treats refrigeration as a public utility.

It is refrigeration they are selling, not refrigerators; and their chief selling weapon is their reputation for maintaining good service.

As a result of this policy, Refrigerators, Ltd., is able to boast that every Frigidaire sold in Calcutta is still in use.

To maintain the big service staff, including 30 men with motorcycles, the well-equipped shop, and the extensive store of parts—on which they have established, and stake, their reputation—Refrigerators, Ltd., charges good prices for its service jobs, and the highest prices for its refrigerators.

A 5-cu. ft. Frigidaire costs 750 rupees retail in Calcutta, or about \$250. The 5 and 6-cu. ft. boxes are the best sellers.

Frigidaire sells on a one year guarantee in Calcutta, and nobody seems to have been able to implant the notion that longer guarantees are of value in Calcutta.

This long tenancy of the dominant position in Calcutta refrigerationdom has given Refrigerators, Ltd., the opportunity to establish a number of principles as being pretty much incontrovertible, such as:

"The open type, reciprocating compressor is the only satisfactory method of producing refrigeration."

Mr. Milner was crossed up, however, when the Frigidaire factory began putting out a rotary compressor.

His reaction to this heresy was exactly the same as that of Mr. Hebditch of Magnet House in Singapore when Westinghouse came out with a bottom-mounted unit: he refuses to sell the innovation.

"When I've succeeded in convincing the buying public that the rotary compressor is inefficient, how can I turn around and sell one?" he asks.

A. J. BOYD of General Motors India (who, unfortunately for my story, was not in the country at the time of my visit) managed to sell a number of these rotary compressor Frigidaire to Mr. Milner a couple of years ago, but they have never been taken out of the packing cases.

Mr. Milner uses them as an object lesson and a sales argument. When a prospect seems to show interest in an HMV, he motions:

"Come with me. See these? Here are thousands of rupees tied up in refrigerators. Our factory equipped these with rotary compressors and we had to buy them. But we have refused to palm them off on our customers. We take the loss, rather than incur the risk of losing good will."

Mr. Milner admits that the weight of this argument in closing sales has more than repaid Refrigerators, Ltd. for the investment in uncrated models.

Expensive Nightcap

Principle source of prospects lies among ice users, the concern finds. Some newspaper advertising is done, but the company depends chiefly upon word-of-mouth promotion by users.

Again to foster the idea that if you buy a Frigidaire, Refrigerators, Ltd., will give you unwavering service; the advertising fund is dipped into to pay for free service wherever and whenever the company thinks it advisable. This "investment," it is claimed, results in extraordinarily high returns in customer good will and word-of-mouth promotion.

To sell refrigeration to Indians requires almost insufferably patient education. For centuries their eating has been wound up in religious beliefs and practices. Among these is a pious horror of "stale" food. Using left-overs would be sinful.

Vegetables and fruit are eaten shortly after picking. When meat is eaten, which is seldom, it must be consumed before sundown of the day on which slaughtering and butchering took place.

To people with unshakable religious beliefs, the only sales appeal for a refrigerator is pride of possession.

Mr. Milner stumbled on to this formula one day when an old Indian, unkempt, and wearing little but a dirty turban and a diaper-like arrangement came into the store. The staff paid no attention to him. Finally the old Indian beckoned Mr. Milner over to him.

"How much?" he asked, pointing to an 18-cu. ft. deluxe Frigidaire.

Mr. Milner smiled indulgently and replied: "Three thousand rupees."

The venerable Indian calmly pulled a 10,000 rupee note out of his diaper, handed it to Mr. Milner, and uttered the Hindustani equivalent of: "Wrap it up."

On investigation it turned out that the old Indian was a landlord out in the provinces, and that he wanted the refrigerator solely so that he could have a glass of cold water before retiring!

All the excess capacity was merely to impress his friends.

Air Conditioning

Messrs. Bromby and Milner are both convinced that air conditioning should have a great future in India. And we'll add our personal observation, right here and now, that if there's any place in the world which really needs refrigeration, it's Calcutta. (Temperature the day I arrived was 106° F.)

Refrigerators, Ltd. is most proud of its installation in the government Test House, where all sorts of articles are subjected to tests for quality. Controllable temperature and humidity are most important in this work, and that's just what Refrigerators, Ltd., has provided.

Another installation of which Messrs. Bromby and Milner are proud is that of the offices of the Tata Iron and Steel Co., Ltd., in Jashedpur. This concern, the biggest of its kind in India, employs 25,000 workers. Water coolers have also been purchased by this firm.

Commercial Progress

Because of the religious bans on "stale" food, noted previously, demand for refrigeration equipment from food markets is almost nil. But patient education has gained some business.

Of course, those food retailing and food serving establishments which serve Europeans and Anglo-Indians (for some reason, the half-castes resent the term Eurasians, so it is seldom applied in India) are good prospects.

Refrigerators, Ltd., manufactures its own commercial coils and cabinets.

As a side light on the special refrigeration needs of India, and as a hint to manufacturers who have not been able to satisfy Indian requirements, let's take a look at some of Refrigerators, Ltd.'s equipment.

Bottle coolers made by this company, which more nearly approximate in appearance the American equivalent than any other equipment, have cabinets of thoroughly seasoned teakwood, beautifully paneled on the outside, and finished in natural color. Compressed corkboard, three inches thick, and sealed in place with hydro-lene to make it waterproof, is used for insulation.

The lining is of ½ inch tongued and grooved boards covered with heavy gauge zinc sheet. Service lids are fitted, each giving access to one compartment, and insulated with two inches of pure compressed corkboard, and lined with zinc sheet. All hardware is made of heavily nickel-plated brass, of rugged construction to withstand roughest use, and to insure air tight lids.

Leaders in their Fields



(Left) G. S. Milner, director of Refrigerators, Ltd., Frigidaire distributor and leading outlet in Calcutta. (Right) C. T. Hooper of Air Conditioning Corp., Ltd., Carrier dealer, would appear to be in the midst of one of Calcutta's terrific "heat waves," but it's really just a flaw in the picture.

A cooling coil of surplus capacity is fitted in the cooler and is operated by a remote compressor. The unit maintains a temperature of 40°.

A 200-bottle cooler is 53 inches in length, 32 inches wide, and 33 inches high, has four compartments, and uses a ¼-hp. air-cooled compressor.

For the small club or restaurant where both food storage and bottle cooling is required, the company has put out a combination cooler. It holds 100 bottles, and includes 5 cu. ft. of food storage space.

In the high temperatures and humidities of India it has been necessary for Refrigerators, Ltd., to put out specialized dark room equipment for the successful processing of x-ray photographs. This equipment consists of a refrigerated tank system developing plant, a film drying cupboard, and in some cases, a specially designed work table and light lock.

A Frigidaire compressor holds the refrigerated tank between 65° and 68° F. Hard rubber developing, fixing, and washing tanks stand in the main refrigerated tank.

This tank cooler, Mr. Milner says, is furnished either with or without running water at 68° F. and 20 g.p.h., and for either 15x12 films, or 17x14.

The work table, which is made up in polished teakwood, contains special tilting bin and a drying cupboard can be built in below the table, out of the way.

Thirty to 40 minutes dries as many as 24 films up to 17x14 size in the film drying cupboard which is dried by an exhaust fan drawing air over a heater and blowing it over the hanging films. The films remain in their hangers and are placed on sliding frames which carry 12 films each into the cabinet.

One of the x-ray developing tanks was installed for Dr. G. Galstaun, consulting radiologist at the Medical College Hospital in Calcutta.

For commercial cooler portability, the company has designed an interesting type of cold storage room to meet Indian conditions, which is called a sectional cooler. This can be installed on rented premises, thus overcoming the objection which must be met so often there that a built-in cooler would be a fixture and would have to be left behind in the event of removal.

Among the company's most interesting commercial coolers is a 250-cu. ft. sectional cooler installed in the regimental kitchen of the First Bn. King's Royal Rifles in Calcutta.

The messing officer there has now caused its removal to Rangoon (a point in favor of this sectional construction) and the Devonshire Regiment which took over the K.R.R. in Calcutta has put in a similar cooler for themselves.

Of course, Refrigerators, Ltd., also installs built-in rooms like the one in the main kitchen at Firpo, Ltd., largest restaurateurs in the east, which has been in operation four years. Mr. Firpo has installed more than 30,000 rupees of Frigidaire equipment in his restaurant.

Mr. Milner pointed to a 70-cu. ft. cooler installed several years ago for Boots Pure Drug Co. as an example of their work in the storage of vaccines and serums. Bengal Chemical & Pharmaceutical Works, Ltd., also has cold storage equipment of 2,000 cu. ft. for vaccine and serum storage.

Other typical installations which he named included an installation at Belvedere, the Viceroy's Camp in Calcutta, which provides for 200 cu. ft. of cold storage space; Viceroy's house, with 80 cu. ft. of cold storage space; The Imperial Delhi Gymkhana Club with 75 cu. ft.; Bengal Immunity Co., Ltd., Calcutta, which has 2,000 cu. ft.; Bengal Veterinary College, with 600 cu. ft.; and the Croner House, Russell St., Calcutta, with 250 cu. ft.

Tank type coolers, Mr. Milner said, readily adapt themselves to most conditions, so Refrigerators, Ltd., manufactures them exclusively in sizes from a 50 gal.-a-day tank to many thousands.

You would have to see the water coolers to appreciate the difference in appearance between the sleek, metal, stream-lined ones to which we are accustomed, and the box-shaped, polished teakwood cases put out by this Calcutta company. They use cork for insulation, and seal it in place with hydro-lene to make it waterproof. If the customer requests it, the coolers are paneled in steel coated plymar at a small extra charge.

One small cooler, box-shape with tiny spigot, is mounted on brackets in what is called the Saturday Club there. It has overall dimensions of 2 ft. 5 inches x 2 ft. 5 inches x 2 ft. 5 inches; a larger one varies the first dimensions with 4 ft. 2 inches. On some occasions at the Club, the smaller of these two has been used for as many as 400 to 500 glasses of water within two or three hours, the secretary of the club reports.

Messrs. Bird & Co., the offices of the Bengal Telephone Co., and the National Insurance Co., as well as the Metro Cinema Calcutta have coolers sold to them by Refrigerators, Ltd., of the larger type described. These are box-like sturdy looking structures mounted on a wooden-leg base with the compressor in plain sight at the base of the unit.

A less beautiful, but highly efficient cold water plant has been doing service in the offices of the Calcutta Electric Supply Corp. With a storage capacity of 250 gals., it supplies water daily to a staff of more than 400 persons. During the hotter days, they tell me, pails of cold water have been carried away from this cooler for bathing purposes.

Sales of refrigerating equipment for wholesale and retail stores have increased remarkably in the last few years, Mr. Milner states. This company builds display cases in lengths of 6 ft., 8 ft., 10 ft., and 12 ft., and has specialized also in making up special jobs to suit the customer's requirements.

Kelvinators for Rent

B. H. SMITH & CO., Calcutta distribution agency for Kelvinator, operates on a unique principle. Mr. Griffin, who manages the refrigeration department of this firm, rents Kelvinators for 15 rupees a month.

Out of Calcutta's 1,500,000 population, there are probably no more than 6,000 Europeans. These people are here to "make money and clear out."

Most of them come for 3, 5, or 7 years on a "covenant" (contract), at the end of which time they go home on leave, and frequently not to return. Hence there's rather a general feeling of unsettledness, of insecurity, among this class of people. To them, Mr. Griffin reasons, the rental idea should appeal.

Air Conditioning Corporation, Ltd.

Two bright and energetic young men who are pioneering air conditioning in India are C. T. HOOPER (Continued on Page 9, Column 1)

Where Reputation for Service Is Maintained



(Left) These service men who work for Refrigerators, Ltd., were too busy with a knotty problem to pose for Editor George Taubeneck when he visited their shop. (Right) Extensive service shop maintained by Refrigerators, Ltd. Good service has been a keynote of this firm's success, and they boast: "every Frigidaire sold is still in use."

Around the World

With George F. Taubeneck

(Continued from Page 8, Column 5)
and WILLIAM W. KING of the Air Conditioning Corp., Ltd., 8, Esplanade Mansions, Calcutta.

(Note to JEAN ADAMS: Their subscription still goes to the old address at 4, Dalhousie Square. It should be changed to the one listed above.)

Although the head office is in Calcutta, this firm maintains a branch at the Exchange, Alipur Road, Delhi; and does business all over India.

Only "big stuff" really interests Messrs Hooper and King. So what they go after is the industrial type of installation, of which they have made more than 30.

Following is the list of air-conditioning installations made within the last year by Air Conditioning Corp.

Irwin hospital, New Delhi; F. Cornaglia, Ltd., Bombay; Times of India, Bombay; Tata Iron & Steel Co., Ltd., Jamshedpur; Metal Box Co. of India, Ltd., Calcutta; Metro Theater, Calcutta; Sir U. N. Brahmachari, Calcutta; Phillips Electric Co., Ltd., Calcutta; Lac Research Institute, Ranchi; Main Telephone Exchange, Ahmedabad; Ellis Bridge Telephone Exchange, Ahmedabad; Central Telephone Exchange, Karachi; Gardens Telephone Exchange, Karachi; Cantonment Telephone Exchange, Karachi.

They stand ready to do any type of job embracing humidification, dehumidification, cooling, heating, ventilation, refrigeration, drying, forced and induced draft, refuse and fume removal.

Although they have imported material from English, German, and Dutch firms as occasion demanded, most of their equipment has been manufactured by Universal Cooler, for which they are agents.

Mr. Hooper received his early training at the Carrier Corp. in London. He has continued his education in air conditioning, he avers, through the columns of ELECTRIC REFRIGERATION NEWS.

Largest Installation

Air Conditioning Corp., Ltd.'s largest installation was the cigarette factory recently opened by Carreras, Ltd., Calcutta, for which the air-conditioning firm broke a number of records by supplying the largest refrigerating plant (as a single unit) yet imported into India; by manufacturing, in Calcutta, the whole air-conditioning equipment which is the largest of its kind ever installed in the East; and by getting the system in operation, in spite of its size, within three months from the date of receiving the contract.

The company met a number of difficulties in the installation, Mr. Hooper related. The building was an existing steel frame structure with thin filling brick walls between columns and beams.

Floors were of reinforced concrete supported by steel trussing so that it was impossible to have a centrally located air-conditioning plant from which distributing ducts could connect with various floors.

This they solved by arranging a separate air-conditioning plant on each floor of the factory, from which galvanized steel air ducts convey the conditioned air to the various departments.

Vagaries in the Calcutta climate and the necessity for maintaining constant conditions in all departments both day and night irrespective of the number of persons present, and fluctuations in other sources of heat and moisture gains made an elaborate set of controls necessary.

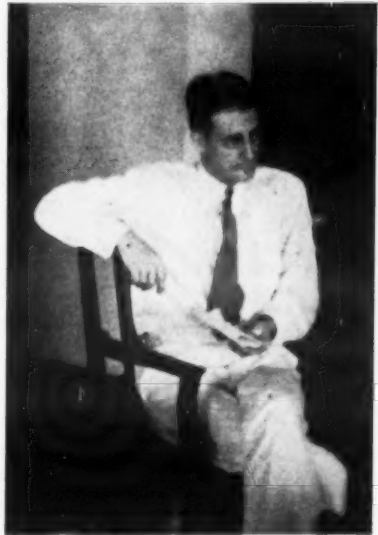
To maintain the constant temperature of 85° F. at all times of the year, steam heater batteries were fitted to each of the air-conditioning plants, which were supplied with medium pressure steam from two large Cornish type boilers through thermostatically operated diaphragm valves.

Cooling during hot weather is accomplished by refrigerating the water supplied to the spray nozzles of the air-conditioning plants.

A patented sleeve valve refrigerating machine of the vertical multi-cylinder type manufactured by H. J. West is used.

Ammonia is the refrigerant employed, with an initial charge amounting to more than one ton by weight. The hot ammonia gas discharged from the compressor is condensed back into liquid in a multitubular

Pioneering in India



William W. King, partner in the Air Conditioning Corp., Ltd., which has been a prime factor in Calcutta air conditioning.

counter current condenser, the latent heat of the condensation being carried away by a constant flow of water approximating to 30,000 g.p.h. and supplied from three tube wells.

The liquid ammonia drains into a liquid receiver at the base of the condenser whence it flows under pressure to two multitubular evaporators. Here the ammonia is expanded into gas again, and the heat required to bring about this change in state is taken from the water to be cooled for the air-conditioning plants.

An auto-synchronous motor was connected to the compressor in order to correct the power factor for the entire factory. This meant that the compressor capacity could not be varied in the normal way by speed reduction to meet changes in the outside atmospheric conditions.

A unique system of by-passing was therefore installed that permits one or two cylinders of the compressor to idle while the remainder function in the normal manner.

Refrigerating equipment, like the boiler house, is a central station plant serving the various air-conditioning units and is housed in an out building away from the factory.

Calcutta Fan Industry

There's a new local industry in India—the manufacture of fans. It

is taking the place of the old Punkah Coolie (who used to have the job of waving a fan on the end of a long pole to keep his master cool and shoo the flies away).

Too old for any form of work, in order to live the Punkah Coolie offered to undertake a task no able bodied man would face.

Electric fans imported into India up to this time have had such high freight and import duty on them that the price was prohibitive for the man of small or even average means.

But in Calcutta and other towns where electricity is now available, the electric fan is gradually finding its way into the homes.

When carefully supervised, the India workman is capable of turning out good work. So with the aid of up-to-date machines, the British India Electric Construction Co., Ltd., and the managing agents, Messrs. Balmer Lawrie & Co., Ltd. have produced a "Blecco" electric fan locally.

Totally enclosed motors, suitable speed regulators, and a white and gold or gold and black finish make the fans comparable to the best looking and smoothest running fans imported.

Calcutta

It was so blankety-blank hot and humid in Calcutta that your uncomfortable correspondent couldn't get his mind on the obvious beauty of Calcutta. This, in spite of the fact that you can't ride three blocks in a Cal-

Calcutta—the City Beautiful



One of the many beautiful buildings that dot Calcutta. This is a public building, and is one of a number of government edifices, since Calcutta was at one time capital of British India.

cutta taxi without seeing a palace or public building which is a noble monument to the architect.

Evidently the British, whose city this is by every physical token, are staunch believers in public works.

There's the High Court to be appreciated, and the Gothically-correct St. Paul's Cathedral, the magnificent, Mogulish type Victoria Memorial, imposing Clive Street (which could be set down in the heart of New York City with complete congruity), and many public buildings which are re-

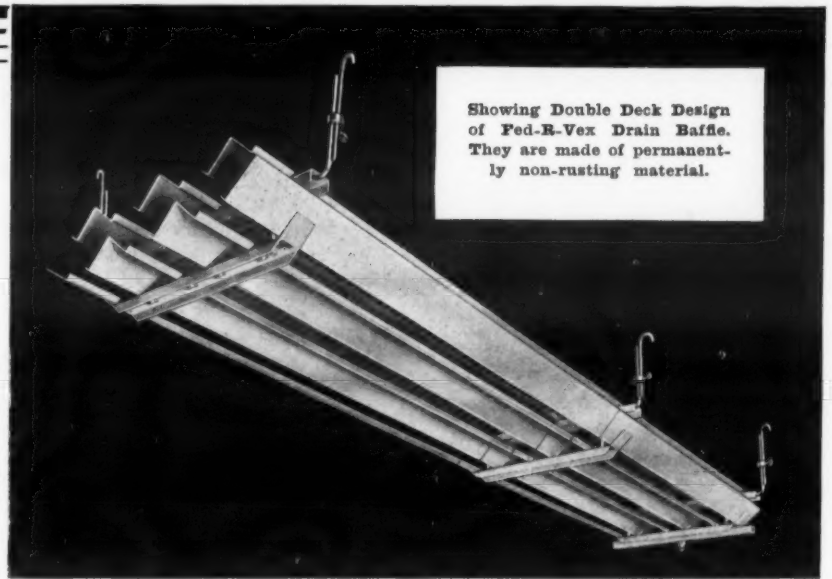
licts of the time (pre-1911) when Calcutta was capital of British India. Today it is simply the second city, in size and commercial importance, of the British Empire.

All over the spreading city are statues to valiant Englishmen—Lord Kitchener, Lord Roberts, Lord Lansdowne, Lord Hardinge, Lord Canning, Lord Minto. You'll see a monument to the Gurbor Campaigners of 1843, made from guns captured in that struggle. In Dalhousie Square is a tall

(Concluded on Page 11, Column 1)

**ONE
MAN**
can easily
and quickly
INSTALL
these new

FED-R-VEX DRAIN BAFFLES



Showing Double Deck Design of Fed-R-Vex Drain Baffle. They are made of permanently non-rusting material.

Patent Pending



Above photograph shows how Fed-R-Vex Drain Baffles occupy minimum headroom.

Photograph at right shows component parts. Instruction sheets for easy assembly included with each set.

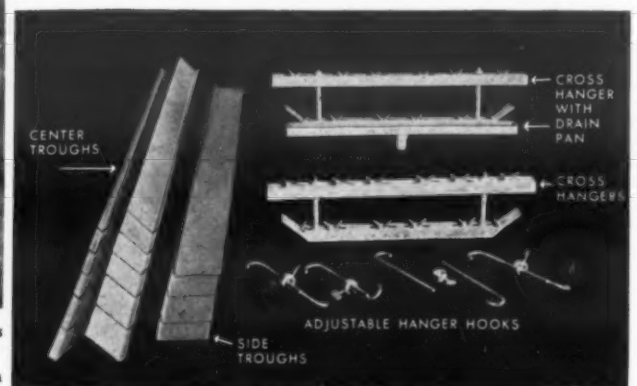
Fed-R-Vex Drain Baffles are designed to be assembled as they are installed in place. This makes it easy for one man to install them in close quarters and eliminates heavy lifting when installing them overhead. The cross brackets are first placed in position . . . then the drain troughs are easily set in place one section at a time. Troughs are adjustable for length so that drain baffle fits each installation exactly.

Fed-R-Vex Drain Baffles take up minimum headroom space and eliminate the necessity for building bunkers or special drip pans. Fed-R-Vex design assures active circulation over the entire coil with practically no restriction to the flow of air, thus assuring more even temperature throughout the box.

THE ONLY DOUBLE DECK DRAIN BAFFLE!

The condensate, or "sweat", from the under side of the upper row of troughs drains into the lower row where it is immediately carried away.

ASK YOUR SUPPLIER OR WRITE FOR
BULLETIN 102



Busy Channel of Commerce



Calcutta harbor. One of the great ports of the world, a wide variety of products moves off of its docks in all manner and types of vessels. The view shows the congested water traffic on the Hooghly river.

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NEW YORK

303 East Sixth St.
CINCINNATI

209 S. Pearl St.
DALLAS

603 W. Washington Blvd.
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1501 W. Eighth St.
LOS ANGELES

175 Luckie Street, N. W.
ATLANTA

712 Beacon St.
BOSTON

2100 Arch Street
PHILADELPHIA

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JULY 15, 1936

Why Retailers Go Wrong on Price Cutting

TALKS with household electric refrigerator dealers in recent weeks indicate that "price cutting" and other forms of competitive "chiseling" comprise the chief "gripe" of most dealers at the present time.

Significant in these interviews was the absence of a number of old complaints. The trouble caused by FHA financing, with its attendant growth of "back alley" dealers, has vanished. It also seems that out of the FHA program and its consequences there came a general clearing of the air with respect to refrigerator time-payment methods.

There is much less moaning about "phoney" distributor discounts to dealers, "special discounts" to department stores, and "spiffs" to dealers and salesmen than we have heard in years past. Mail-order house competition and the tactics of the ice industry cause some distress, but these factors are in evidence only in certain territories.

Dealers Complain that They Are Merely Trading Dollars

But loud and vehement are the cries about price cutting! There has been scarcely a single dealer interviewed by the NEWS staff this year who did not bring up the subject. In many cases, it has been the dealer's principal topic of conversation. Gist of the average dealer's complaint is that "price cutting" and excessive allowances offered by competition force him to slash prices to the point where he is merely "trading dollars."

Because of this state of affairs, a number of disgruntled dealers feel that they are in the refrigeration business "just for the ride," with little or no hope of making a profit.

Too Easily Stamped by Competitor's Advertising

We often wonder if specialty dealers are not too easily stamped by reports of price cutting on the part of their competitors. Too often, it seems, they fail to investigate to see whether it really is necessary to meet the reported price level.

Let us consider some of the sources of information which so often determine the dealer's decision on prices:

We should probably place news-

paper advertising first in the list. Retail dealers are notably sensitive to their competitor's offers in local newspaper advertisements. Nothing seems to get a retail merchant so excited as the appearance of a big advertisement by his competitor announcing prices lower than those shown on his own price tags.

Jumping at Conclusions

Having himself read the advertisement he jumps at the conclusion that every living soul in the community has also read it with equal interest and he immediately has visions of droves of customers rushing into his competitor's store to buy great quantities of the advertised merchandise.

He also anticipates the appearance in his own store of good customers wildly waving the advertisement in his face and denouncing him for charging exorbitant prices.

These two mental pictures simply shatter his nerves. He can only think of two things to do: (1) change his price tags immediately to show the same price, or (2) run a bigger and better advertisement announcing still lower prices.

All Buyers Are Not Fools

Before taking such rash steps, we would advise the dealer to consider, and perhaps investigate, the possibility that the advertiser may have only one shop-worn model to sell and that he is using the cut-price only as bait for the sucker trade.

If so, then it is probably an old trick which the price-cutter has used many times before. If that is true, then isn't it possible that most of the housewives in the neighborhood are well aware of his selling methods.

Even this argument, we realize, is not much comfort to the dealer who considers all prospects too ignorant to see through shady merchandising schemes.

A Well-Tested Principle of Successful Merchandising

And right there, we believe, is where a lot of retailers go wrong. All our own observations and experience confirm the theory that the most successful and profitable businesses are those which operate on the principle that the average buyer is intelligent.

The merchant who adopts that attitude toward his trade will often face the trying experience of seeing a prospect walk out of his store to spend money elsewhere. The compensating factor is that more intelligent buyers will walk into his store and, furthermore, they will come back again and bring others with them.

A merchant must have faith in himself and faith in his goods, of course, in order to build a business on faith in the public. If that faith is lacking then we'll agree that there is only one thing for him to do—become a price cutter, play the sucker trade as long as it lasts, then fold up and move on.

The Public Will Pay for Quality and Service

When the public buys any merchandise which calls for an assurance of quality, or which requires service of any kind, it is willing to pay a fair price for those added ingredients.

What an opportunity that offers to the dealer whose word is good and whose reputation for service is known in the community!

Consider how important those two factors are in the sale of an electric refrigerator! Then why should a responsible dealer think that he must meet the price of an irresponsible competitor?

Letters

Commends George for Faithfully Reporting Conditions as They Exist

Appliance and Merchandise Dept.
General Electric Co.
Nela Park, Cleveland, Ohio
July 1, 1936.

Mr. Cockrell:

Not for publication (see note below) but just to satisfy a personal desire to acknowledge a good job well executed, I am writing you to tell you what a grand job I think your World Touring Editor, George Taubeneck, has done and is doing on his tour.

I have traveled enough to know the energy and stick-to-itiveness required to have kept so faithfully at his work as George has on this wonderful trip. You are to be congratulated on having such a fine young man on your staff, and on your courage and foresight in allowing him to make the trip.

Mr. Taubeneck has reported conditions in the refrigeration industry as they exist at points where he stopped in a most interesting way. I like his human appeal method of writing. The complete trip recorded in book form will be a substantial contribution.

Here's hoping that George returns in fine health and none the worse for his strenuous work and fine results.

A. M. SWEENEY, Sales Manager.
Note: In response to our request, Mr. Sweeney kindly gave his consent to publication of the above letter.

He Can't Trust the Salesmen

Could you please send me a copy of ELECTRIC REFRIGERATION NEWS or REFRIGERATION DIRECTORY or whatever it may be, at a reduced price? I don't need the latest out. A few weeks back number will do. I want to buy a refrigerator and I have caught the salesmen in so many lies that I just don't know what to do and I thought if you would send me a back number, one you did not have a sale for, I could judge better what I want and perhaps not get stung as bad as I was a few years ago.

Please send one that has the description of the leading makes as to size, mechanism, insulation, etc. I would have use for only one copy. That is why it is no use subscribing for it.—Ralph W. Chamberlain, Main St., R.F.D. 1, Box 393, Riverside, N. J.

Answer: The July 1 issue of ELECTRIC REFRIGERATION NEWS contains detailed specifications for all 1936 models of all makes of electric refrigerators. It will give you just the information you want to check up on the salesman. The price is 25¢ per copy.

It seems too bad that you cannot find a dealer whom you can depend upon to give you reliable information about electric refrigerators. We do not happen to know any of the dealers in Riverside but if you will inform us regarding the make, or makes, which appeal to you as possibilities we may be able to get some special attention to your case by writing to the main office of the distributor in your territory.

Also we would like to know about your previous experience in which you got stung a few years ago. What make of machine did you buy and what sort of trouble did you have with it?

Possibly you are having trouble because of your effort to "drive a bargain" with the salesman. If so, he will naturally try to outsmart you. We note that you even ask us to sell you a copy of the NEWS "at a reduced price." If you expect to get reliable information, or a dependable refrigerator, you will have to pay for it.

New Australian Tariff Practically Prohibits Imports from U.S.

F. C. Lovelock, Ltd.
Everything for Refrigeration
235-239 Clarence St.
Sydney, Australia
June 22, 1936.

Mr. Cockrell:

I have for reply your letter of April 29 and from it was glad to learn of the further activities of George Taubeneck, and also of the state of affairs at the Business News Publishing Co.

George's trip will certainly be more or less an education for him, and there is no question that his stories will stimulate the interest of your readers, and apart from the very valuable information that he will gather during the trip, the fact that he has done the trip and has met all the people in the various countries, will be a decided asset to your organization generally.

We are glad to feel that you consider us old friends and you can rest assured that we will do our very best to remain your dependable source of information so far as business in Australia is concerned.

No doubt you have already been apprised of the new tariff amendments and prohibitions that our Government has brought down, which in effect prohibits the importation from the U.S.A. of electric refrigerators and electric refrigerator parts. This has definitely placed many of the Australian distributors of American equipment in a very awkward position, and incidentally, ourselves. At the moment the Authorities are exercising the prohibition to the full letter, and although the position may be relieved somewhat at a later date, it is definitely certain that for seasons subsequent to the forthcoming one, the Australian people will have to get their refrigeration requirements from elsewhere than the U.S.A. This is rather a pity as apart from the considerable amount of business that we ourselves are building up with your country, we seem to have made quite a lot of personal friendships. However, perhaps these things are sent to try us, and we must accept them as part and parcel of the trials and vicissitudes in this great game of commerce.

As far as you are concerned, it will not make any difference to our activities in our endeavor to keep up subscriptions to E.R.N., and we are still hopeful of achieving our quota, viz. 100 before the end of the year.

F. E. HANSEN, General Mgr.

Fedders in Philadelphia

Fedders Mfg. Co., Inc.
Buffalo, N. Y.
July 3, 1936.

Gentlemen:

We noticed that in the June 24 issue you mention that the new Fedders branch is being opened at Baltimore. The heading says Baltimore, but the story says Philadelphia. Philadelphia is correct, not Baltimore.

We just mention this in passing, and while it might save some confusion to have a correction notice, the slip is not serious. W. D. KEEFE, Sales Mgr., Refrigeration Div.

A Well-Recommended Dealer in North Africa

Thonet Brothers, Inc.
33 E. 47th St., New York
Manufacturers of Chairs, Tables, and Upholstered Furniture
July 7, 1936.

Gentlemen:

Mr. A. S. Cohen, No. 24 Rue des Glacieres of Tunis, North Africa, has represented our firm for the past 20 years.

He is interested in getting the agency for his country of a reliable American manufacturer of electric refrigerators for home use. Mr. Cohen is willing to either buy the product outright or sell it on a commission basis.

It occurs to us, owing to your wide acquaintance in this field, that you may be in a position to refer this to an interested party for us, and if so be good enough to instruct them to write direct to our friend giving him full and detailed information with catalogs and export quotations. Also, kindly ask him to send us a copy of his letter to Mr. Cohen.

May we ask that you kindly let us know whether you have been able to do anything for us in this matter. H. M. DIDISHEIM.

Perhaps Australians Are Buying Records from Bootleg Studios

Australian Federation of Broadcasting Stations
Kembla Building, Margaret St.
Sydney, Australia
June 17, 1936.

Mr. Cockrell:

I have had brought under my notice a statement entitled "Protected Pirates" published in the ELECTRIC REFRIGERATION NEWS of May 6 last.

In this article you complain that "Australian Industry has been developed by pirating American designs and manufacturing them behind exorbitantly high protective tariff walls." You point out this condition does not stop at the Refrigeration Industry, but has been practiced in the broadcasting industry. You give one instance of an American artist who visited Australia and on the day she arrived listened to an American dramatic radio serial, in which she stated she was recorded and which was being used by an Australian Station without any recompense for the talent of the artist.

If the statement is correct, then the complaint is not one of an American artist against an Australian Broadcasting Station, but there would be just ground for a strong complaint by Australian Stations against the recording studio in the United States. The pirating would not take place in Australia, but in America, where

the artist is recorded evidently without her knowledge.

The Recording Studios charge Australian Broadcasting Stations good cash for the programs they sell them, and the Australian Stations pay for the full performing right and rely on the American Studio to purchase the talent which is sold to Australia.

We suggest that there is probably a misunderstanding between the Recording Studio in the States and the artist. In any case, that is where the charge of pirating should be examined.

As president of the Federation of Commercial Stations in Australia, I will be very much obliged if you will publish this correction.

A. E. BENNETT, President.

Export Executives Are Always Interested in Traveler's Reports

Export Trade and Shipper
20 Vesey St., New York
July 13, 1936.

Mr. Cockrell:

The sample copies of ELECTRIC REFRIGERATION NEWS referred to in your letter of July 3, reached me the latter part of last week. I thank you for your courtesy.

I wonder if you would be willing to grant me permission to reprint parts of Mr. Taubeneck's description of foreign markets. Our readers, all of whom are export executives in major concerns in this country are always interested in travelers' reports of conditions and trade set-ups in foreign countries. I feel sure they would be especially interested in Mr. Taubeneck's articles because they are the fruit of a trained observer and also a trained writer.

We, of course, would be pleased to give credit to your publication and publish the excerpts under a by-line with Mr. Taubeneck's name.

If this is agreeable to you, I am wondering if you could lend us some of the cuts used to illustrate some of the articles, or if not could you send us photographs.

I understand that Mr. Taubeneck will be back in this country about Aug. 1. Can you advise me the exact date he will arrive in New York and where I can get in touch with him in this city before he goes on to Detroit? I would like to have a chat with him about his most interesting trip.

WALTER R. BICKFORD, Managing Editor.

The News Has No Office in New York City

Refrigerator Association of New York, Inc.
Arthur F. Callahan, Managing Dir.
60 East 42nd St., New York
July 10, 1936.
Business News Publishing Co.:

Frequently we receive calls asking us for your New York office address and telephone call. At the moment we are not aware of your having an office here and would appreciate your informing us definitely in regard to this.

M. B. CLARK, Secretary to Mr. Callahan.

Exponent of Safety Would Like to Testify

22 Pine Ave. South, Albany, N. Y.
July 11, 1936.

Mr. Cockrell:

Although still confined to my home as results of the experiment of September, 1931, I have but one regret, that I am unable to testify as to the absolute safety of Freon (per se) in household refrigerators and for air cooling. Your report on the hearings re Coolerator are very valuable—keep up the good work.

FREMONT WILSON.

How to Service Majestic Hermetics

Herman Millman
65 Gramatan Ave.
Mount Vernon, N. Y.
July 11, 1936.

Gentlemen:

Enclosed you will find 10¢ for which I would like a copy of the Aug. 16, 1933, issue of ELECTRIC REFRIGERATION NEWS, describing the servicing of Majestic Hermetic Refrigerators. Also, please place my name on your Catalog Mailing list, as it will be of great help and convenience for anyone in the refrigerator business. I thank you.

HERMAN MILLMAN.

Please find enclosed money order for \$3.00 for which send me one of your MASTER SERVICE MANUALS and place my name on your catalog mailing list.—Joseph J. Gallagher, P. O. Box 16, Tuscarora, Pa.

I read your NEWS weekly and find it very helpful. Please enter my name on your catalog mailing service list. Thank you.—Walter A. Beal, 29 Marriner St., So. Portland, Me.

Around the World

With George F. Taubeneck

(Concluded from Page 9, Column 5)

obelisk which is a tombstone to the 120 poor devils who died in the Black Hole of Calcutta just across the way.

Also you should take a look-see (if you ever go to Calcutta) at the Indian Museum, and the incredibly ornate Jain and Kalighat Temples.

However, adequately templed and palaced though Calcutta may be, its architecture is far from being its excuse for being. Calcutta is one of the great ports of the world, and is rapidly ascending the scale of commercial importance.

Harsh Hooghly

Were it not for the wealth of the territory for which Calcutta serves as an outlet, it probably wouldn't be much of a port. It simply had to be.

But such an unlikely port a mariner never saw. Pilots must be taken aboard more than 100 miles from the docks, and after that it's pretty tough going through treacherous bars and currents, and up the ugliest river in the world, the muddy Hooghly. The port proper consists of 25 miles of river front, where vessels load tea, jute, burlap, shellac, hides, iron, coal manganese, mica, Indian fineries, and Bengal tigers. In return they drop foodstuffs and manufactured goods. Around five million tons of shipping moves in and out this port annually.

Three railways contribute exportables to Calcutta port, as do a number of small navigable streams. More than 40% of India's exports leave Calcutta. Rest of the traffic is divided up between Bombay, Karachi, and Madras. Greatest share of the export trade is in jute, for the manufacture of which 70-odd mills line the banks of the Hooghly—interspersed between Standard (Socony) and Shell oil reservoirs.

Despite the fact that India has half a million laborers employed in more than 300 cotton mills, the tremendous Indian demand for cotton cloth makes that item the leading import. Naturally, that's where England comes in.

Chief oil depot, where petroleum and oil products are unloaded and stored, is known by the comically appropriate name of Budge Budge.

Gunny Sacks

Awhile back I mentioned jute as being Calcutta's leading export. It should be added that its manufacture is Calcutta's leading industry, and its growing is the leading agricultural pursuit of the province of Bengal, which is sole supplier to the world.

Know what jute is? You're a liar; and neither did I. It's a vegetable fiber from which gunny sacks are made. Most of the world's jute packing material is fabricated along the banks of the Hooghly; although some raw fiber is shipped to mills in Europe, and some to Dundee, in Scotland.

It's a highly speculative business; and jute prices—as well as jute mill shares—are among the most eagerly watched financial bulletins published in British Empire newspapers.

Good Tea, Poor Coal

Second and third-ranking Calcutta export are tea and coal. At one time indigo was a high-ranking export, but German chemists and the Great War, which gave rise to synthetic dyes, killed all that. Indian growers have now become tea growers, financed by British capital, and managed from Calcutta.

It's good tea, much preferable, to the writer's way thinking, to China tea or Java tea. (After you've spent a small portion of your life on British boats, where afternoon tea is the major event of the day, the various qualities of tea begin to make an impression on you).

I've never burned any Bengal coal,

but I've listened to seafaring men swear at it enough to believe it is rather poor stuff. Apparently it's as hard to keep a Bengal coal fire burning as it is to keep a pipe lit.

Low Averages

Perhaps the most interesting sight in Calcutta is the old floating bridge over the Hooghly from Calcutta to Howrah—home of epidemics and poverty-stricken Bengalis.

Between five and six in the evening the bridge is jammed and packed with steaming, stinking, revolting Indian laborers whose garb, manners, and penury stamp them as belonging to the lower dregs of the human race.

Most are on foot; some of the more affluent are drawn by coolies in various rickety conveyances. Shudderingly fascinating faces catch your attention momentarily, but in the main your eye sees only a kaleidoscope of pitifully clad, underfed, unwashed, dark-skinned people, hurrying, scurrying to God-knows-what kind of hovels.

You cross this bridge to get to the railway station, where you shove your way—holding your breath, through more hordes of the same breed. Over the floating bridge the traffic was a tide, moving irresistibly in one direction. In the station the movement is in currents and cross currents, eddies and whirlpools, confusing and baffling.

India, the land of "high exceptions and low averages," has its great scholars, its fabulously wealthy princes, and its impressive monuments; but it also has its degraded, desiccated, half-starved millions. The floating bridge and the Calcutta railway station are places to get your fill of these.

Most of them are Bengalis, bearded, turbaned, and excitable. They are water-carriers, door-openers, unskilled labor of the bottom classification. How they manage to exist is a mystery to the whites who own and run Calcutta, but live they do.

Also heavily represented in Calcutta are the fighting Sikhs (who drive all the frightful taxis), the undersized Ghurkhas (who become watchmen and messenger "boys"), and the shrewd Marwaris.

Dust Storm

Getting a ticket to Bombay by way of Benares, Agra, and Delhi, was a nerve-racking problem. The railway station from which one leaves Calcutta is huge, and filled with so many trotting, volatile Indians that it was necessary to line-plunge a way through to a ticket desk.

To make matters worse, an odd sort of English was spoken there. But I finally wangled a second-class ticket, and then spent half an hour finding the train. First-class travel in India is for maharajahs and governmental officials, and is priced accordingly. Second-class fares are high, too, compared to mileage costs anywhere else in the world.

Common practice is to take an Indian bearer along with you. He finds your place, takes care of your baggage, makes your bed (you must carry your own bedding, or else sleep in your clothes, as I did), helps you change trains, and takes care of your needs generally.

For the Bombay trip a bearer costs in the neighborhood of \$20, plus his third-class round trip ticket. Being a confident traveller of no little experience, I decided I could do without this "necessary luxury." Difficulties with railway officials en route, chiefly due to my ignorance of the customs and rules, plus their ignorance of the English language, made me regret this economy many times.

Baggage costs extra on Indian trains. For mine I paid 90 rupees (close to \$40), after a great deal of excitement around the scales, the meaning of which had me baffled.

The night ride to Benares was made in a compartment which had three benches running lengthwise, one on each side, and one in the middle, which was mine. On my right was a fat Mohamedan who slept in his fez, and snored through his drooping mustache. On the left bench was a very old Hindu in a very old and dirty white turban, and diaper-like rag costume. He had a bad cold and no handkerchief.

Windows were thrown wide open because of the heat. Next morning we were caked with dust, which had filtered through (I later discovered) my securely locked luggage so thickly that I could write my name in dust on the shirts.

Demonstration in Meat Market Makes Sales For Dealer

SEATTLE—A four-week Saturday demonstration in a local meat market and grocery store has resulted in several sales and a big list of prospects for Ernst Hardware Co., new Kelvinator dealer here.

Food store demonstration handbills were used to advertise the event. A display in the Ernst store featured the market contest; a display at the market featured the Kelvinator equipment handled by Ernst.

Each customer at either the meat market or the grocery received one ticket in a free drawing for a Kelvinator, for every \$1 worth of regular merchandise purchased, and two tickets for every \$1 worth of merchandise purchased, if listed on the handbills.

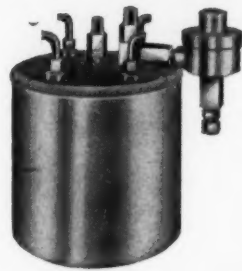
Writers Speak at Employee Cooking School of G-E

SCHENECTADY — Three editorial staff members of nationally known women's magazines recently visited the General Electric research laboratories, and were guest speakers at a three-day employee cooking school conducted here by Miss Edwina Nolan G-E home service director.

Miss Elizabeth C. Woody, Foods and Equipment editor of *McCall's Magazine*, Miss Esther Kimmel, Foods editor for *Pictorial Review*, and Ada Bessie Swan, director of *Woman's Home Companion* Home Service Center were the guests.

Miss Ruth Davenport of A. Wayne Merriam Co. assisted Miss Nolan in conducting the cooking school.

ALL WEATHER LOOKS ALIKE TO TEMPRITE BEER COOLER



With the thermometer soaring in these hot summer days, dispensers with ordinary beer cooling equipment are finding out its shortcomings.

Excessive foam in the glass . . . warm beer . . . off-flavor beer . . . fluctuating temperatures . . . waste . . . dissatisfied customers! These are some of the problems which are daily being encountered.

Temprite Instantaneous Beer Cooling System changes the entire picture. Irrespective of weather conditions Temprite permits dispensing beer with no loss of its original quality and by doing this at a uniform, and correct temperature, gives a perfect glass of beer to the customer and builds up business for the dispenser. Temprite does this without loss or waste, resulting in maximum profit from the keg.



Thousands of beer dispensers have not heard this story. Carry it to them and profit from the business that awaits you.

TEMPRITE PRODUCTS CORPORATION
1349 EAST MILWAUKEE AVE. - DETROIT, MICHIGAN
ORIGINATORS OF INSTANTANEOUS LIQUID COOLING DEVICES

"Ready-to-Wear" or Tailored-to-Fit?

There's a Big Difference . . . in THERMOSTATS as well as CLOTHES!



The STAINLESS STEEL Thermostat

"Long, Short and Medium" may be fine in theory—but the service man has never been born who could make money or build a worthwhile reputation with "hit-or-miss", "catch-as-catch-can" replacements of domestic refrigerator thermostats.

The less tinkering there is to be done and the fewer adjustments there are to be made—the more profit and the greater customer satisfaction! That is why the line of Rancostat replacements is a "custom tailored" line. There are many **Exact Replacements**. No holes to drill—no extra materials to buy—no adjustments to make. And Ranco **General Replacements**, used with Ranco mounting brackets, insure a perfect-fitting, perfect-operating job with the minimum of effort, time and expense.

Every Rancostat Replacement Unit is engineered to save you time and trouble—and to give your customers the finest, most dependable controls ever built for domestic refrigerator use.

Your Rancostat jobber is "style and quality headquarters" for refrigerator thermostat replacements.

THE AUTOMATIC RECLOSING CIRCUIT BREAKER COMPANY
Columbus, Ohio

RANCOSTAT

VIRGINIA SMELTING Company
WEST NORFOLK, VIRGINIA
131 STATE ST. BOSTON - 76 DEAVER ST. N.Y.

EXTRA DRY
ESOTOO
LIQUID SULPHUR DIOXIDE
V-METH-L
VIRGINIA METHYL CHLORIDE

Air Conditioning

Results of Tests on Summer Air Conditioning Equipment at Mason City, Wash.

By Homer J. Dana and R. E. Lyle
Engineering Experiment Station, State College of Washington

WHEN opportunity was given to conduct a series of tests for electrical house heating in the 100% electrified town of Mason City, plans were also made for investigating the possibilities of domestic air-conditioning in the region to be supplied with power from the Grand Coulee when it is completed.

The summer weather of the Inland Empire region of the Pacific Northwest is characterized by moderately high temperatures and low relative humidity. Therefore, summer air conditioning as regards domestic application more particularly, does not require particular attention to the removal of moisture in order to assure comfort.

In this region there are about five months of the year during which air cooling is beneficial. During this period, according to computations made from the 1935 weather reports for this area, there would be 92 days during which cooling would be required, with a total of at least 594 hours of operation of equipment. This would be equivalent to an average of 6.4 hours of operation per day used.

The power required for small domestic applications of summer air-conditioning equipment would range from one kilowatt upward, depending upon the cooling capacity installed and the air circulating system employed. At the lowest prevailing domestic rate of 2 cents per kwh. for power in this region, the average cost per day used during the season would be from 13 cents up.

User-comfort from summer air conditioning depends very definitely upon proper distribution of cooled air in the room, characterized by an absence of perceptible drafts. Air movement in a warm room may contribute to the comfort of the occupants, but drafts of cooled air cause a feeling of chilliness which defeats the object of air cooling, namely greater comfort.

Object of Tests

It was the purpose of these tests to learn more definitely the extent to which summer air-conditioning would apply in the Inland Empire and its possibilities for becoming of commercial importance in the use of electric power from the Grand Coulee Dam.

Furthermore, since the average home-owner is more or less un-

acquainted with the principles of summer air-conditioning, this report will explain some of the essential features and give a simple description of the method of providing for this type of domestic comfort.

Discussion of Air Conditioning

The air which we breathe and in which we live is too often found to be unsuited for the best living conditions. It is either too hot or too cold; too dry or too moist; or filled with objectionable dusts and odors of various kinds.

Conditions favorable to good health require that the air should be held within the range of comfortable temperature; its humidity should lie within certain limits; it should be free from harmful dust particles; and it should be changed often enough to dispose of objectionable odors. All of these conditions apply to year-round air-conditioning.

The main difference between summer air conditioning and winter air conditioning is that in summer, the air frequently needs to be cooled, instead of being heated, and under certain conditions benefit is derived from reducing its relative humidity instead of increasing it.

Human Comfort

The temperature range between 68° and 72° F. is accepted as being most desirable for year-round comfort in the home. When summer temperatures rise greatly above this value, a measure of discomfort is usually experienced. It is true that some relief can frequently be derived merely by imparting a perceptible movement to the air. This movement tends to remove the enveloping blanket of warm moist air which normally surrounds the individual in warm weather and so promotes evaporation of moisture from the skin, thus taking up heat and causing a pleasant sensation of coolness.

But benefit from the air movement is very limited, and therefore it is usually desirable to cool the air as well. However, even though the air should be artificially cooled to the optimum living temperature, the desired comfort of the individual is not necessarily assured in every respect.

If moisture content of the air is high, evaporation from the skin is retarded with a consequent feeling of discomfort which may be evident in

a feeling of oppression or in stickiness of the skin or both. Such a condition is occasionally experienced just preceding a summer storm. The remedy is to remove some of the moisture held in suspension in the air and thus lower its relative humidity.

The human comfort zone of relative humidity lies between 35% and 65%. When higher than 65% and if the temperature at the same time is above 70° F., a feeling of physical discomfort is usually experienced. If the relative humidity is below 35%, rapid drying of the skin and of the mucous membranes of the body takes place.

Prolonged exposure to very low relative humidity usually affects the health of the individual, often resulting in some type of ailment affecting the nasal passage. Hence, it is important that relative humidity receive its proper consideration in connection with summer air cooling.

In some regions, high relative humidities prevail in summer time and provision needs to be made for dehumidifying the air. In other regions, the percentage moisture content is normally so low that when the air is properly cooled its relative humidity is automatically brought up to a more healthful level. In the Inland Empire, which embraces that part of

The State College of Washington last year was given the privilege of using the 100% electrified town of Mason City on the Grand Coulee Dam site for studying the subject of summer and winter air conditioning, particularly with reference to power requirements and operating cost.

Findings on the tests are presented on this and the following page.

Loan of the air-conditioning equipment for these tests was made by the Westinghouse Electric & Mfg. Co., and by the General Electric Co. through the James Smyth Plumbing Co. of Spokane. The Wesix Co. of San Francisco furnished certain instruments and apparatus used for these studies.

the State of Washington lying between the Cascade Mountains on the west and the foothills of the Bitter Root Mountains in Idaho on the east, the summer climate is usually characterized by rather low relative humidity.

Therefore, the extraction of moisture from the air for summer air cooling in this region does not constitute a major problem, although at times benefit may be derived from this feature also.

Summer air cooling can be accomplished by passing air through a spray of cold water, or by passing it over the cooling unit of a mechanical refrigeration plant. Since the usual domestic water supply is either not cold enough, or is not economically available in sufficient quantity, the mechanical refrigeration method of cooling is usually employed.

Cooling Equipment

Practically all mechanical refrigeration systems for air cooling include three essential units. First, the evaporator or cooling unit usually consists of a group of pipe coils

inside of which some refrigerant is boiled or evaporated. This evaporation occurs at a low temperature and takes up heat, thus serving to cool the air passing over the outside surface of the cooling unit. The cooling unit may be located in the room to be cooled, or it may be located in an air duct system serving one or more rooms.

Second, there is the compressor unit which pumps the evaporated refrigerant out of the evaporator coils at low pressure and delivers this gas to the condenser at a higher pressure where it is condensed into liquid ready to be used again in the evaporator. The compressor, driven by a motor, is usually located in the basement although in small installations it may be located in the same room with the evaporator.

Third, the condensing unit usually consists of a set of pipe coils into which the gas from the evaporator is pumped by the compressor to be condensed into liquid refrigerant again. This condensing process removes the heat from the refrigerant which is absorbed while in the cooling unit. The condenser coils may be cooled by air, but more frequently are equipped to be cooled by water flowing over or around them. The condenser is usually located near the compressor.

These three units—the evaporator, the compressor, and the condenser—are permanently connected together with pipes and valves and their operation is controlled either manually or automatically.

When installed permanently in a home, the compressor and condensing units are usually located in the basement with cooling water connections, and waste to the sewer. The evaporator, or cooling unit, may also be located in the basement and connected to the ducts of the forced air circulating system; or it may be located in the room to be cooled, and provided with a small circulating fan to increase its effectiveness in cooling. Automatic control may include a thermostat in the room to be cooled, which starts and stops the compressor, or controls the circulating fan to the evaporator as required.

Building Insulation

The removal of heat by mechanical refrigeration requires power, the amount depending upon the rate or the size of the "heat load." Obviously then, in the interests of economy, it is desirable to reduce this heat load as much as possible. To this end, it is customary to close the doors and windows of an air-cooled room, and to provide window shades or awnings against the entrance of direct sunlight.

The load which must be handled by air-cooling equipment includes heat given off by occupants of the room, the heat, if any, given off by mechanical or electrical equipment in the room, and the heat which may enter from the outside as warm air, or by conduction through the walls and ceiling, or as sunlight through the windows.

The transfer of heat through walls and ceilings can never be wholly eliminated, but it can be reduced by the use of heat-insulating materials. These materials include slag or rock wool, expanded mica ore, diatomaceous earth, and vegetable fibre of various kinds. The latter may be in loose form, such as balsam wool, or shredded tree bark, it may be in quilted form, such as dried seaweed sewed between layers of paper, or it

may be in compressed board form consisting of wood, straw, or cane fibres.

Use is also being made of the heat-reflecting properties of polished metal foil. This usually comes cemented to a heavy paper which is installed in the walls and ceiling during construction. Sawdust and planer shavings have also been used to fill air spaces in walls and ceiling but are open to several objections. They are subject to excessive settling, they harbor vermin, they are not waterproof, and are considered as increasing the fire hazard.

Tests have been made which show that the investment required to properly insulate the average residence will be returned in the cost of fuel saved within a period of three years. This refers to winter time saving only. When summer air cooling is added, this same investment does double duty, therefore giving to building insulation a place of first importance in relation to comfort and economy in a home.

Description of Tests at Mason City

Two houses in Mason City were equipped for summer air-conditioning tests during 1935. Both were single-story structures with low composition roofs and with ventilating louvers in the gables, which were kept open during the summer.

The outside walls consist of matched siding, building paper, sheathing, 3½ in. wall space, and an inside surface of beaverboard or of ½ in. insoboard. Ceilings were also of the same material nailed to the joists. Roofs were of ¾ in. sheathing covered with red slate-faced composition roofing.

In House A, the ceiling and walls were insulated with 3 inches of "Unifill." Provision was made primarily for cooling the living room, although some benefit was also derived in adjacent rooms. In this house, all the refrigerating equipment was located underneath the floor. Suitable air ducts and a circulating fan were provided to circulate air from the room over the cooling coils and back to the room.

House B, although of different shape and dimensions, employed a similar type of construction except that all the air spaces in the walls and between the ceiling joists were filled with mineral slag wool. In this house, the refrigerating equipment consisted of a portable unit including all three refrigerating elements located in the room being cooled. Flexible electrical and water connections enabled the equipment to be transferred from one room to another.

Each installation was more or less typical of the type of equipment commercially available for domestic summer air conditioning.

Air Cooling Season

Subsequent tests showed this installation capable of holding the inside temperature as much as 26° below the outside temperature, but of course such a large temperature difference is not usually expected or advised.

In one house in which the walls and ceilings were insulated, the capacity of the cooling unit very closely approximated the heat load imposed upon it so that there was no need for the thermostatic control to operate.

Table 1 shows the number of hours per month during 1935 in which air cooling was found desirable.
(Concluded on Page 13, Column 1)

Class 9100 Regulators With MANUAL CUT-IN LEVER



Lever raised vertically to lock contacts closed.

To close contacts lever is pressed down.

The special external manual cut-in lever, pictured, is available in all 9100 Regulator types, whether pressure or temperature, with or without overload protection and high pressure cutout.

The function of the lever is to allow starting of the refrigerating cycle in advance of its normal automatic cut-in point. If desired, the control contacts may be locked in to assure continuous duty, but locking in does not prohibit the operation of the overload mechanism or high pressure safety cutout.

Export Dept., Regulator Division, H. M. Robins Company,
120 Madison Ave., Detroit, Mich., U. S. A.

SQUARE D EVERYWHERE
SQUARE D COMPANY

REGULATOR DIVISION, DETROIT, MICHIGAN
WESTERN DIVISION, LOS ANGELES, CALIFORNIA
SQUARE D COMPANY, CANADA LTD., TORONTO, ONTARIO



CURTIS

SCORES AGAIN

CURTIS pioneered the "V"-type Timken-roller-bearing equipped, pressure-lubricated refrigeration compressor which, at the time, was an innovation—now a generally adopted design.

Now CURTIS pioneers with a compact 30 Ton Dual Unit incorporating two proven "V"-type compressors driven by one motor.

Dual design permits automatic capacity control for variable air-conditioning loads.



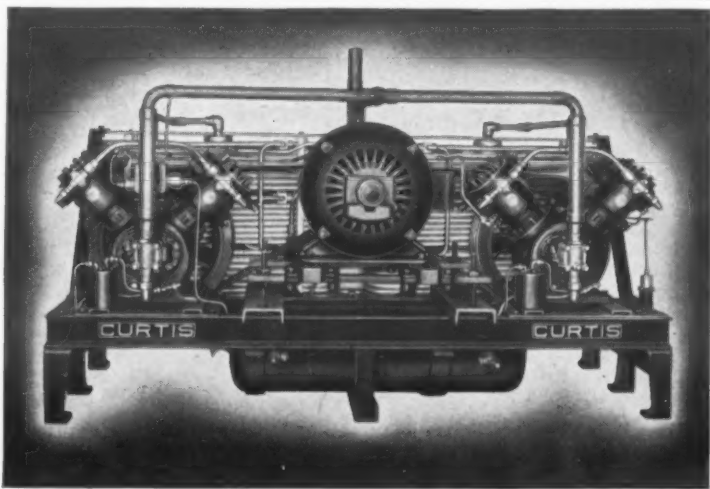
Belt adjustment provided in all directions instead of usual vertical only.

A complete line of units up to 30 Tons.

CURTIS

CURTIS REFRIGERATING MACHINE CO.
Division of Curtis Manufacturing Company
1912 Kienlen Avenue, St. Louis, Missouri

In Canada: Canadian Curtis Refrigeration
Company, Ltd., 20 George Street,
Hamilton, Ontario, Canada



Data on Power Consumption & Cost of Air Conditioning Homes Secured in Tests

(Concluded from Page 12, Column 5)

It is recognized that the area to be served with power from Grand Coulee Dam will not all be subject to temperatures corresponding to those prevailing at Mason City. Some sections will have more and some will have less hours per day when the temperature will be above 80° F. and when cooling would be desirable. However, Table 1 may be accepted as being close to the median of the prevailing temperatures in this region.

Table 1

Month 1935	Days Temperature Reached 80° F.	Total Hours Above 80° F.
May	10	42
June	15	86
July	27	212
August	22	163
September	18	91
Total	92	594

No temperature records are available for Mason City prior to 1935, but such records are available for certain other points in the Inland Empire. Inspection of such records shows that the summer of 1935 represents an average of the past six years, as regards the number of days during which temperatures exceed 80° F.

On this basis, therefore, it may be assumed that Table 1 is representative of the seasonal demand for domestic air cooling in this region.

Power Required for Air Cooling

The amount of power required for air cooling depends in general upon the size of the heat load to be handled. This is affected by size of room, amount of heat leaking into room, heat given off by people and equipment within the room, etc.

In order to determine the capacity of the cooling equipment needed and the power required for any given installation careful calculations of all variables must be made.

However, for small domestic applications in well insulated homes the power requirements of the two experimental installations for these tests would probably be representative. Table 2 gives the average power requirements derived from data secured in these tests.

600-Hour Cooling Period

From Table 1 it is shown that the expected average annual domestic cooling period in this region will be approximately 600 hours, and from Table 2 the energy used for a typical small domestic application would range from 550 to 1,250 kwh. Table 3 shows the annual cost for power for cooling based upon several hypothetical rates.

For most localities in the Inland Empire there prevails at present a domestic rate for electricity in which the lowest step is 2 cents per kwh., and those homes having an electric range usually consume enough electricity each month to get down to the 2-cent rate.

On this basis, therefore, the operating cost for a typical domestic cooling system for the summer, on the present rate for power would range from \$11.00 to \$25.00 spread over a period of five months. It is certain that if power were available for this purpose at a rate as low as 1 cent per kwh., a large number of domestic users would find mechanical air cooling very attractive.

Air Cooling with Off Peak Power

It would, of course, be imprac-

ticable to cool air at night with off peak power and attempt to store the cold air for use the next day. But it would be entirely feasible to cool some other medium such as water, and use it later for room cooling purposes. For instance, assume that House A, as indicated in Table 2 uses 2 kw. of power for a maximum of 10 hours per day, and that the effective refrigerating capacity of the unit is 1½ tons, or 18,000 B.t.u. per hour. Thus, the amount of heat to be extracted from the living room, on the above basis, would be 180,000 B.t.u. per day of 10 hours. This represents the amount of heat absorbed by the melting of 1,250 lbs. of ice.

While the economics of using off peak power for domestic summer air cooling has not been investigated thoroughly, it is certain that the idea is mechanically feasible. There undoubtedly are certain advantages to this method such as manufacture of ice for other uses, etc.

Condensation of Moisture

Moisture Condensed. Provision was made to measure the moisture condensed on the evaporator coils of one of the air-cooling installations. With outside relative humidities ranging from 19% to 27%, the relative humidities in the room being cooled ranged from 37% to 46%, and the rate of condensation of moisture varied from .5 to 1.07 pints per hour.

The amount of moisture condensed would depend upon the volume, the temperature, and the relative humidity of the air being cooled as well as upon the temperature of the cooling coils. In this case, approximately 300 c.f.m. of air was being circulated over the evaporator coils.

Weather Conditions. During the 48 days on which test data were secured, 37 days were recorded as being clear, with 11 days partly cloudy. During that time the wind velocity was recorded as ranging from 3.9 to 13 miles per hour with the majority of the days enjoying breezes at 4 to 6 miles per hour.

Cost of Power

Cost of Power for Tests. By reason of the special conditions under which the contractors were able to buy power for construction purposes on the Grand Coulee Dam, it was possible to secure power for these tests at 3 mills per kwh. At this rate the summer's operations on House A amounted to \$3.76.

Power Requirements for Air Conditioning. Table 4 shows the average power requirements for comfort air equipment as installed for domestic use.

Comfort of Occupants

Considerable attention was given during these tests to determine the comfort enjoyed by the occupants of the houses in which tests were being conducted. It was found that the distribution of the cold air into the room required very careful attention. Perceptible air movement under these conditions seemed to cause a feeling of chilliness which defeated the feeling of comfort ordinarily expected from the reduced temperature.

Since the relative humidity of the air in this region is normally low, there is no great problem involved in dehumidification. The relative humidity of the cool air in the rooms under test appeared to be well within the comfort range and sufficiently low so that the occupants of the room were not aware of other than a comfortable sensation.

Table 2—Power Used in Test Houses

House	Cu. Ft. Cooled	Test Hours Operated	Kwh. Used	Average Power Used	Kwh. Per Season
A	5195	100.95	211.3	2.08 kw.	1254 kwh.
B	3552	361.63	341.5	0.94 kw.	594 kwh.

Table 3—Average Costs Using Various Power Rates

House	Annual Kwh. Used	Annual Cost at Sample Rates Per Kwh.				
		3c	2c	1c	½c	¼c
A	1250	\$37.50	\$25.00	\$12.50	\$9.37	\$6.25
B	550	16.50	11.00	5.50	4.12	2.75

Table 4—Power Requirements for Domestic Cooling

1. Comfort air conditioning, single room..... ½ hp.
2. Comfort air conditioning, average six-room house with diversity.... 3 hp.
3. Ditto, but cooling 100% at time, no diversity..... 5 hp.
4. For larger residence with more than six rooms..... ½ to ¾ hp. per room

KRACK ENGINEERS

LIFETIME COILS AND UNITS

CUSTOMIZED COILS:
SUR-E-FEX, HUM-E-FEX, LOUVR-E-FEX, AIR-E-FEX

CUSTOMIZED UNITS: FAN-E-FEX, (Standard and Deluxe), TRANS-E-FEX, DRAFT-E-FEX, BLO-E-FEX, VERT-E-FEX, For Refrigeration, BREEZ-E-FEX, COMF-E-FEX, SAN-E-FEX For Air Conditioning. Send For New Literature

REFRIGERATION APPLIANCES, INC., 1342 W. Lake Street, Chicago

Business Gains from Air Conditioning Are Shown in G-E Book

BLOOMFIELD, N. J.—Business increases resulting from the installation of air conditioning are emphasized in a book recently published by General Electric Co. for the use of its dealers.

Reduced spoilage losses, lowered cleaning costs, better preservation of stock, and more alert help are among the most popular reasons given by clients for purchasing conditioning systems.

A discussion of the functions that air conditioning performs, a study of the economics of business air conditioning, and illustrations and descriptions of actual installations made in hotels, restaurants, theaters, and private homes are included in the various sections.

For the engineer, the company announces, the book contains detailed descriptions and illustrations of different units, and the extent of their efficiency and operation. For the most part, however, all technical language is omitted so that the book will be of value to the man in the street who is interested in finding out about the possibilities of air conditioning in relation to his own needs.

Birmingham Bureau Uses Copy on Installations

BIRMINGHAM, Ala. — Quarter to half-page advertisements in the local newspaper on individual air-conditioning installations have been adopted by the Birmingham Air Conditioning Bureau as the best means of breaking down the sales resistance of the public in general and competitors in partic-

ular to manufactured weather, reports Leo M. Fried, manager of the Bureau.

In the advertisements, a picture of the interior of the store is carried with a caption such as "Cool, Clean, Fresh Air Now an Added Attraction For Shoe Store," "Jewelry Store Provides For Comfort of Its Customers," or "Public Responds As Restaurant Joins Parade To Air Conditioning."

"Our effort so far has been especially to publicize an installation in each line of retail business with the conviction that others will soon fall in line," Mr. Fried said.

Results of the plan have been evidenced, he stated, in the 1600% increase in horsepower rating during 1935 over 1934.

By June of this year 13 installations had been made in the city, considerably more than was originally estimated.

Century & Penn Hold 6 Dealer Meetings

CEDAR RAPIDS, Iowa.—Century Engineering Corp. of this city and Penn Electric Switch Co., Des Moines, recently concluded a series of sales and service meetings, held in cooperation with Century burner distributors in six leading eastern cities.

Meetings were held at Lewiston, Me.; Bellows Falls, Vt.; Worcester, Mass.; Hartford, Conn.; Troy, N. Y.; and Wilmington, Del.

Distributors who cooperated in this series of meetings were: C. A. Leander, Worcester, Mass.; C. E. McGregor, Automatic Heating Co., Troy, N. Y.; H. E. King, Delaware Plumbing Supply Co., Wilmington, Del.; T. E. Byrnes, Inc., Hartford, Conn.; and George Kelly, Century Products Co., New York City.

COMMERCIAL REFRIGERATION EXECUTIVES

Wanted By

CARRIER CORPORATION

• Additional opportunities open in Carrier organization for selected men of mature experience in Commercial Refrigeration sales.

Those will be favored with factory regional sales management, large distributor sales management, or home office supervision experience in connection with Commercial Refrigeration promotion.

Those interested should apply by letter only, giving name; address; age; race; education; whether married or single; religious and fraternal affiliations; and experience in detail, giving in each case the name of employer; capacity in which employed; length of time employed; salary and other compensation received, and reason for leaving.

A personal interview will be arranged later for those whose letters qualify. Address: Carrier Corporation, 850 Frelinghuysen Ave., Newark, N. J., mentioning this advertisement.

A MESSAGE WHICH WILL HELP PROTECT YOUR

A Warning

to all persons interested in
AIR CONDITIONING

You are not getting true air conditioning
unless you get, at least, these services:

- FOR SUMMER AIR CONDITIONING at least
 1. The air must be cooled.
 2. It must be dehumidified.
 3. It must be circulated.
- FOR WINTER AIR CONDITIONING at least
 1. The air must be heated.
 2. It must be humidified.
 3. It must be circulated.

- FOR YEAR-ROUND AIR CONDITIONING at least
 1. The air must be cooled and dehumidified in summer.
 2. It must be heated and humidified in winter.
 3. It must be circulated.

Most air conditioning, in addition, cleans the air

Any equipment performing less than these minimums is not true air conditioning

NO ONE today questions the tremendous benefits of modern, scientific air conditioning... its great contributions to human health and comfort... the industrial improvements and economies it has made possible. Commercially, it pays unusually high returns in increased patronage, employee health and efficiency. Careless, misleading use of the terms "air conditioning" and "air conditioner" has caused much confusion. There are in the market today appliances which may perform one or more of the functions of true air conditioning, yet which do not perform

the minimum necessary to properly merit the name "air conditioning." Many of these appliances efficiently and usually perform the limited functions for which they are intended, but when they are called "air conditioners," more is promised than can be fulfilled. Only with true air conditioning can full benefit be obtained. For the protection of your investment and for your personal satisfaction, insist on true air conditioning—which means at least the services listed above.

DEFINITIONS LATER BY THE UNITED STATES DEPARTMENT OF COMMERCE AND THE NATIONAL BETTER BUSINESS BUREAU.



This advertisement is sponsored jointly by the Air Conditioning Manufacturers' Association and by Kinetic Chemicals, Inc.

This message is being brought to the attention of
698,972 people through the following publications:

Time.....	625,292
Chain Store Age.....	15,123
American Restaurant.....	12,437
Retailing.....	6,499
Architectural Forum.....	21,713
Federal Architect.....	2,300
Building and Building Management.....	2,462
Building Modernization.....	13,146
Total Circulation	698,972

This advertisement is sponsored jointly
by the Air Conditioning Manufacturers' Association and by
Kinetic Chemicals, Inc.



Air Conditioning

500 Rooms in Dept. of Agriculture Building Have Year-'Round Conditioning

WASHINGTON, D. C.—Novel application methods characterize the air-conditioning system installed last fall in the east and west wings of the U. S. Department of Agriculture's administration building here, and recently put in operation.

Riggs Distler & Co. of Baltimore was general contractor for the job, and Frick Freon equipment was selected to carry the cooling load.

Design conditions for summer operation are 83° F. dry bulb and 65° F. wet bulb inside, when the outside temperature is 95° F. dry bulb and 78° F. wet bulb. A total of 500 rooms are provided with year 'round air conditioning.

Spray Type Dehumidifier

A separate spray type dehumidifier, with spray fan and auxiliary equipment, is located in the sub-basement of each wing. No less than 4,500 lbs. of air must be handled by each dehumidifier per minute, the temperature being lowered from 90.6° with a wet bulb temperature of 73.8° to a dew point not exceeding 53° and a dry bulb not exceeding 55.2°. Outside air introduced into each wing is 2,920 lbs. or more per minute. Three return air fans with recirculated air heaters and filters are also located in each wing.

Each of the dehumidifiers is insulated with 2 inches of pressed sheet cork, and most of the ducts carrying the supply and return air are insulated in 1 inch of corkboard.

The rooms are supplied with conditioned air through an existing duct system. Since a good many of the rooms are used as laboratories from which the air is exhausted through chemical type hood ducts, the return air registers in these rooms are sealed up.

Air movement in the rooms is not allowed to exceed 50 feet per minute, measured at all points between 2 and 7 feet above the floor and more than 3 feet from the walls.

Refrigerating Capacity Is 720 Tons

Actual refrigeration is furnished by four big Freon-12 compressors, each having two cylinders with 15 inches bore and 10 inches stroke. Load carried by these machines is best appreciated by noting the power required for driving them; the compressors are so arranged that two machines are duplex-coupled to a synchronous motor mounted directly on the shafts between them; each motor is of 450 hp. Combined refrigerating capacity is 720 tons.

Hand-operated capacity controls on each cylinder make it possible to reduce the load by 50% when desired. These control valves open into a port

leading to the suction manifold surrounding each cylinder, rather than attempting to re-expand the gas from an adjustable pocket at the head of the cylinder, as in ammonia practice.

Motors are of Ideal manufacture, and are operated with current at only 208 volts. They turn at 360 r.p.m. Split rotors and long hubs are features, and each of the motor generator sets is of 5 kw. capacity.

The compressors discharge directly into the horizontal condensers, which are placed below the water cooling shells. Each condenser is 38 inches in diameter by 18 feet long, with four passes. Cooling water being at 85° F., 4 gallons per minute are kept in circulation per ton of refrigeration.

Water used in the Freon condensers is cooled in a pair of two-stage air washer type units, each with a large centrifugal fan, circulating pumps, and auxiliary equipment. Cold water lines to and from the condensers are insulated to prevent dripping. Cooling units for the water are of similar construction to the dehumidifiers previously mentioned. The coolers must so perform that the water leaving the condensers does not exceed 93.6° F. when the outside wet bulb temperature is 78° F.

Discharge Stacks

Fans discharge through vertical steel stacks extending through to the roof of the building. All refrigerating and water cooling equipment is below the ground level, in the space formerly used as a boiler house, immediately behind the central portion of the building.

The Freon-to-water coolers are of the spray type, and while of the same length as the condensers (18 feet), are 42 inches in diameter. The water passes back and forth six times in going through the coolers, 2,150 g.p.m. being kept in circulation by the pumps. The water must be cooled from 52° F. to 44° F.

Refrigerant is kept in motion through each of the coolers by a 300-g.p.m. pump, the impellers of which are arranged in stages. Special seals and sumps are provided for the pumping equipment.

Freon feed to the coolers is under control of float switches and electric valves. Oil separators of an improved patented type are installed through the bottom of each shell.

Both high and low-pressure cutouts are provided, together with two thermostats. Twelve mercury wells, two gauge boards of slate, cork insulation and isolation, and 7,600 lb. of Freon-12 were among the incidentals on the job. Tube turns and welded connections are used throughout the piping.

Utility Engineer Tells Of Air Conditioning In Magazine Story

NEW YORK CITY—Answers to a layman's questions on air conditioning are offered in the August issue of *McCall's* magazine in an interview with E. A. Freund, development engineer in charge of air conditioning for the Union Electric and Power Co. of St. Louis.

"What is air conditioning?" "Why do I need it?" "Is there any way of cooling one room?" "How does a winter conditioner work?" "Is it good for hay fever?" are a few of the questions treated.

To the question, "How much will it cost me to install a winter air conditioner in a new six-room house?" Mr. Freund's reply was: "In general, only a few hundred dollars more than a good heating plant."

"How much extra would a complete summer air conditioner cost?" was another question. Mr. Freund estimated the cost at approximately \$750. "By installing a minimum-sized conditioner," he advised, "one part of the house may be cooled by day and the bedrooms by night."

"If I can spend only enough money for a winter air conditioning system, will it be of any use in bettering the summer air temperatures?" one home owner interrogated. "Some systems will circulate the air in summer by a fan in the unit. Cool air is pulled into the house at night and recirculated by day to reduce the temperature," Mr. Freund replied.

Good insulation is important when building a new house which is going to be air conditioned, the engineer said, and awnings in the summer, and double windows in the winter will also materially affect the operating costs.

Tool Co. Equips Sales Coach with Cooling

CHICAGO—An air-conditioned sales room on wheels was recently put on the road by the Duro Metal Products Co. as a "Show Shop for Home Mechanics."

The air conditioning system was designed, manufactured and installed by Mills Novelty Co., under the supervision of Allen Trask, chief air-conditioning engineer. The shop was designed by T. L. Hedgpeth, chief engineer and sales manager of Duro Metal Products Co.

Interior is equipped as a complete home mechanic's workshop displaying the company's line of drills, saws, lathes, and machinery, all for use in the home workshop. The "shop" is being sent all over the country to show the products to department stores and hardware dealers.

Completely stream-lined, the sales coach is painted in brilliant red and white, and is outfitted with modern steam heating and electric power plant. A 6 ft. 6 inch ceiling provides adequate standing space for the tallest buyer.

Corozone Distributorship Organized in West

SACRAMENTO, Calif.—New distributor for Corozone air conditioning equipment here, is The Western Air-Conditioning Corp., formed to handle Corozone units for the states of California, Oregon, Washington, Nevada, Arizona and the Hawaiian Islands.

Edward R. Lester of Lester Motors, Inc. is general manager of the new concern. Other officers are: E. H. Bacon, formerly of the Celotex Co., sales manager, and E. C. Jerome, of Medford, Ore., distribution manager.

The Western Corp. will establish distributorships in strategic marketing centers, and through them will set up Corozone dealerships in the territory. Due to the wide variety of climatic conditions here, General Manager Lester believes that there will be a wide market for the sale of Corozone portable units.

Doctor's Testimonial Used To Promote Conditioning

DETROIT — Mechanical Heat & Cold, Inc., Westinghouse air-conditioning distributor here, recently sent out facsimiles of a testimonial letter from Dr. John Harvey Kellogg, medical director of the Battle Creek Sanitarium, as a promotional piece for its room coolers.

Dr. Kellogg testified that the apparatus "lowered the temperature of a good-sized room from 93° to 80° in 20 minutes and in an hour brought it down to 78°. It kept an invalid lady perfectly comfortable during our very hottest days when people in this region were suffering severely from overheating."

With the letter, the distributor included a folder entitled, "Do You Want a Change of Climate?" describing company's unit air conditioners.

Air-Conditioning Group Sales for Month of May, 1936 Total \$2,570,007

Data tabulated below is the fifth in a series of monthly statistics on the value of orders booked for air-conditioning systems and equipment, released through the office of Director William L. Austin, Bureau of the Census. Orders booked by 98 manufacturers are shown in this tabulation.

Item	Value of Orders Booked, 1936	May	Total, 5 Mos.
Air Conditioning Group—Total	\$4,412,681	\$2,570,007	\$16,079,810
Unit Systems—			
Self-contained (shipped substantially complete).....	509,024		848,518
Not self-contained (shipped in sections), including refrigerating or cooling medium.....	878,797		2,467,800
Central-station Systems, excluding installations if installed—			
Human comfort (including refrigerating or cooling medium sold separately or otherwise for air conditioning).....	646,494		2,669,899
Industrial (including refrigerating or cooling medium sold separately or otherwise for air conditioning).....	25,091		328,876
Refrigerating or cooling medium sold to contractors or other distributing outlets (not manufacturing air-conditioning equipment) for air-conditioning systems, when such knowledge as to the application is available.....	339,441		1,013,117
Air washers, including pumps and motors and controls where furnished.....	84,402		314,338
Air filters (not including sales of filters used with machinery other than fans).....	21,363		117,048
Humidifiers.....	65,395		328,405
Fan Group—Total	\$1,278,684	\$4,860,385	
Fans, including bearings, pulleys or couplings (if furnished)—			
For public and semi-public buildings.....	160,342		728,612
For general industrial uses.....	378,689		1,501,730
For mechanical draft.....	98,420		570,878
For jobber stocks and unknown uses.....	86,639		260,769
Small housed and propeller fans—			
Direct connected small housed blowers with motors and control (merchandise motors).....	120,943		458,367
Propeller fans, direct connected and belted (for ventilation only).....	366,804		975,823
Driving mechanism for general fan use (not reported above)—			
Electric motors and controllers (manufactured or jobbed).....	63,324		321,933
Steam engines and steam turbines (manufactured or jobbed).....	3,513		42,273
Unit Heater Group—Total	563,990	3,131,424	
Industrial Type Heaters, including heating element and motors where furnished—			
Equipped with blower-type (centrifugal) fans.....	74,317		405,521
Equipped with propeller-type fans.....	158,378		1,070,383
School-Room Type Unit Heaters, including heating element and motors and control where furnished.....	196,048		935,824
Indirect Heating Surface (not including unit heater surface)—			
Steel pipe coil type (manufactured or jobbed).....	1,242		11,045
Cast iron type (manufactured or jobbed).....	5,546		67,870
Copper or aluminum type (manufactured or jobbed).....	128,459		640,781

Liquid Meters Used to Distribute Cost of Conditioning

MIAMI BEACH, Fla.—What is believed to be the first large air conditioning installation in which the liquid refrigerant has been successfully metered and sold on a unit basis, so that operating costs are shared by building tenants, is the Carrier system in the Lincoln Theatre Building in this city.

Three Brown liquid meters are used, one as a master, with one sub-meter measuring the refrigerant used by the 1,300-seat Lincoln Theatre, and the other for the remainder of the building. A constant check is produced by comparison of the meter readings.

Equipment consists of three 40-ton Carrier Brunswick Freon compressors, each having a suction by-pass control, and all equalized. Carrier Evaporative Condensers are used to remove the heat from the refrigerant, with the compressors so controlled automatically that under certain conditions air cooling of the compressors is used.

Nine Carrier Weathermakers are used to provide conditioned air for the 1300-seat theater, the office portion of the building, a drug store and specialty shop.

Belcher Industries, Inc., Carrier dealer, installed the system for John L. Patten, building owner. Complete satisfaction with the system and plan of cost division was manifested by the tenants, in answers to letters, asking their opinion written by Mr. Patten.

Salt Lake Coal Co. to Sell Ortho-Climes

SALT LAKE CITY—Royal Coal Co. here has been appointed distributor of Fairbanks-Morse Ortho-Clime air-conditioning equipment in the Rocky Mountain region.

The coal company maintains an appliance department in connection with its retail sale of coal, and L. E. Adams, vice president of the company, believes there is a definite field for air conditioning in the territory it serves.

F. F. Stevenson, in charge of sales of the Ortho-Clime division of Fairbanks-Morse, conducted a sales school for the engineering and dealer personnel of Royal Coal.

Delco-Frigidaire Line to Be Handled by Bauer & Co.

HARTFORD, Conn.—Bauer & Co., Frigidaire dealer at 440 Asylum St., here, has been appointed distributor for Delco-Frigidaire air conditioning and automatic heating equipment. The firm has enlarged its organization, and announced 24-hour service.

York Gets Job for Cooling Du Pont Office Building

YORK, Pa.—One of the largest air-conditioning orders of the year came to York Ice Machinery Corp. recently with the contract to air condition the du Pont office building in Wilmington, Del. It calls for 600 tons of refrigeration, to condition 167,000 cu. ft. of air per minute.

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Commercial Uses

Temprite Gives Data for Estimating Proper Size Units for Beer Cooling Requirements

DETROIT — Detailed calculations covering many dispensing installations have given a "yardstick" for selecting the proper-sized Temprite beer coolers, declare company officials.

It has been found that the dispenser can draw only about 20 gallons of beer per hour, employing small glasses, (12 oz. or less), and give attention to the other duties of the bar, even during the peak periods. There are a few exceptions to this rule and they usually involve the habits of the individual dispenser in the matter of his method of drawing beer. Some bartenders during rush periods will open the tap and fill possibly a dozen glasses without closing it.

Normally where the dispenser draws not more than four or five glasses at a time, the above 20-gallon classification calls for the selection of the model 25B series coolers. It is assumed that the kegs are stored in such a manner that its temperature does not exceed 55° F.

Other Considerations

There are then only the other cases to consider, for instance, where the duties of the dispenser call for the drawing of beer only, with no other responsibilities, or where he may be drawing beer in larger than 12-oz. glasses or in pitchers. Also, to this class should be added as mentioned above, the instances where the dispenser, during peak periods has the habit of drawing large numbers of relatively small glasses of beer without closing the faucet.

Moreover, in too many instances beer stored in reserve may reach comparatively high temperatures and even though the rate of draft is low within the classification calling for model 25B series coolers, the amount of work to be done may be greatly increased.

These classes which include high draft rates (approximately 60 gallons) and which may also involve high keg temperatures as suggested will call for the selection of model 50B series coolers.

Calculating Hourly B.t.u. Load

In any case the maximum hourly B.t.u. load on the condensing unit is determined by multiplying the number of bartenders by the maximum rate of draft in gallons per hour as established above, then by 8.5 to convert to pounds and then by the difference in temperature between the beer in the keg and the desired exit temperature.

It will be noted that the number of coolers or taps does not enter into the problem nor the number of brands of beer which may be on tap. (Note: Unless it is definitely known that the temperature of the beer in the keg is higher than 55°—this keg temperature is ordinarily used.)

Having determined the B.t.u. load, select the condensing unit as outlined in the May 8, 1935, issue of ELECTRIC REFRIGERATION NEWS.

For practical purposes, a table of compressor sizes to apply to Temprite cooler selections has been compiled. Condensing unit sizes shown assume keg temperatures not exceeding 55° F. To these sizes, therefore, should be added capacity necessary for the pre-cooler or to provide for extreme keg temperatures without pre-cooler. These additional necessary capacities may easily be determined by the 20

gallon or 60 gallon per hour rate method, and the temperature increase above 55° F.

It has been considered desirable, say Temprite officials, to provide separate cooling for bar water supply. In many instances, beer outlet temperatures are required, either at the time of installation or later, which are much too low when one coil of the Temprite is used for cooling water.

Protection of Water Coil

To avoid freezing, the water coil might best be wrapped around the outside of the shell of the cooler. These drinking water coils are now available, factory wrapped, employing flattened tubing. Direct contact is established with the side walls of the cooler by dipping the whole assembly in tin bath. Sufficient capacity in water supply is assured for all bar drinking water.

It is not intended to provide sufficient capacity in this manner for restaurant demands. Beer coolers in all sizes are available provided with factory wrapped water coils and are designated by adding the letter "W" to the cooler model description, for instance, S50-B3W.

In the usual beer-cooling installations the condensing unit operating the Temprite cooler is also used to operate the other cooling units comprising the complete installation. In fact Temprite cooling units lend themselves particularly to duplex installations of this nature.

This is true because Temprite coolers require refrigeration only when beer is being drawn through them, allowing the full capacity of the condensing unit to be employed for other refrigeration purposes at all times.

When, however, the Temprite unit does require refrigeration it is capable, because of the high suction pressure at which it operates, of absorbing, if necessary, the entire capacity of the condensing unit. As a result many installations are encountered where Temprite can be added without the need of additional compressor capacity.

Multiple Installations

Compressor recommendations for multiple installations are computed as follows:

1. Determine the hourly B.t.u. peak load imposed by the beer coolers as already instructed.
2. Select a condensing unit with sufficient hourly capacity to meet this load, keeping in mind that the Temprite itself must operate at the following suction pressures to produce 40° F. exit beer.

Refrigerant	Pressure
-SO ₂	8.6
CH ₂ Cl	24.4
Freon-12	31.4

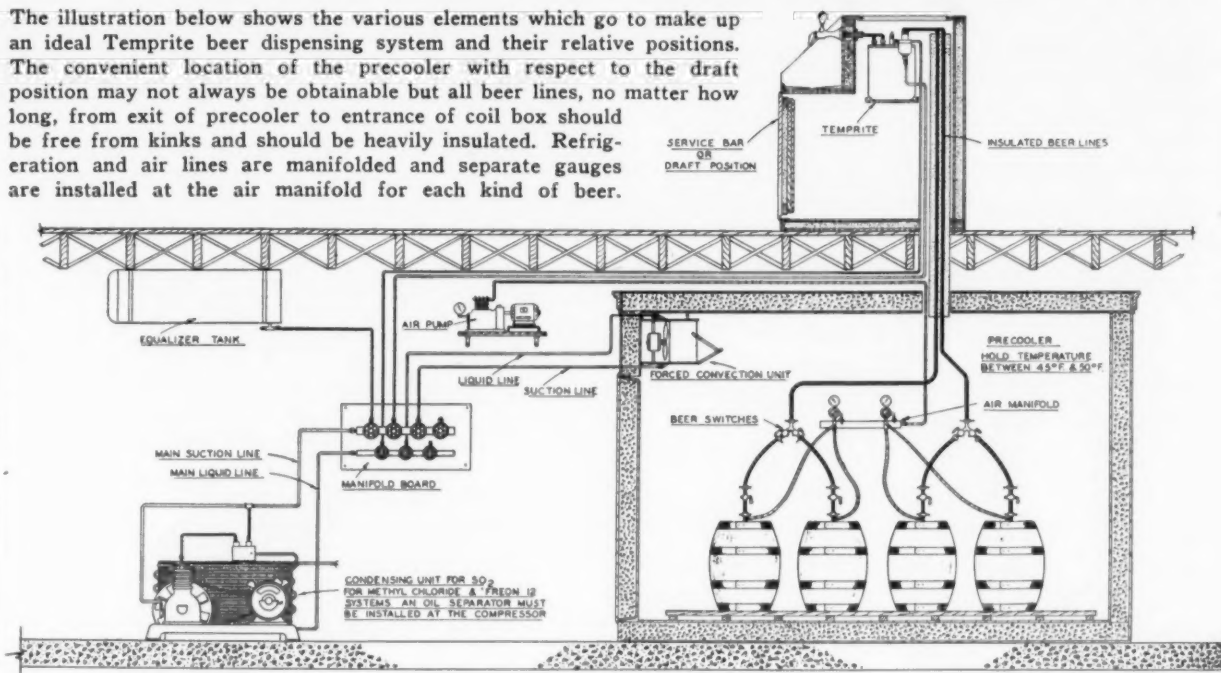
Note: Allow for a reasonable pressure drop in the suction line when making this selection.

3. Calculate the total daily beer-cooling load which is the maximum number of half barrels used daily, multiplied by 136 to convert to pounds and by the temperature difference between the keg and the desired exit temperature. This converts the total daily beer-cooling load to B.t.u.

4. Divide the value obtained in step 3 by the hourly B.t.u. capacity of the condensing unit as found from step 2. This establishes the number of hours which the condensing unit must operate per day to handle the Temprite beer-cooling load. Add to this an additional one hour to provide for the heat leakage at the draft station fixture and subtract this total from the number of hours which the condensing unit manufacturer recommends that his machine be permitted to operate per day.

Temprite Model Beer Dispensing System

The illustration below shows the various elements which go to make up an ideal Temprite beer dispensing system and their relative positions. The convenient location of the pre-cooler with respect to the draft position may not always be obtainable but all beer lines, no matter how long, from exit of pre-cooler to entrance of coil box should be free from kinks and should be heavily insulated. Refrigeration and air lines are manifolded and separate gauges are installed at the air manifold for each kind of beer.



This leaves the number of operating hours available for handling the other cooling units which are connected in multiple with the Temprite. These remaining allowable hours of running time are normally spread uniformly over the entire 24-hour period of the day.

5. Multiply the hourly capacity of the condensing unit at the lowest operating suction pressure required by the other cooling units, by the number of hours available from step 4. This gives the daily B.t.u. capacity available for the operation of the other cooling units and in most instances it will be found to be sufficient for the operation of these units. If not the condensing unit size is increased to the point where sufficient additional capacity is provided to meet the requirements of the other units.

Other recommended installation and operating practices suggested by Temprite engineers are:

A. Switch Setting—The compressor must be operated from a pressure control, the cut-in point of which should be as low or lower than the setting of the Temprite control valve

(see tag attached to control for this setting). The switch may be set to cut out at any pressure below this point depending upon the requirements of the other cooling units.

B. High Suction Pressure Condensing Units—High suction pressure condensing units are always recommended for use with Temprite cooling units. Low suction pressure condensing units may, however, be used provided that they have sufficient capacity at the low suction pressure recommended for their operation to handle the hourly B.t.u. load established by the Temprite units.

C. Temperature Regulation—Each Temprite cooler is equipped with its own control valve and will maintain uniform exit temperatures within its capacity without the use of additional control devices, provided the proper cut-in point is maintained as explained in Point A. The temperature of the coldest evaporator on the multiple system can be controlled directly by the cut-out setting of the switch. Other evaporators with intermediate temperatures should be equipped with a pressure control valve such as Temprite model 700.

Drink Manufacturer Uses Crosley Coolers

BIRMINGHAM, Ala.—Dr. Pepper Co., beverage manufacturer, places Crosley "Koldrink" bottle coolers in the gas filling stations that sell its drinks, reports J. W. Clary, manager of the radio and refrigeration department of the Mattress & Spring Co., Crosley distributor.

A bubbler available on one model also helps cooler sales to stations which require a limited amount of water, the manager stated.

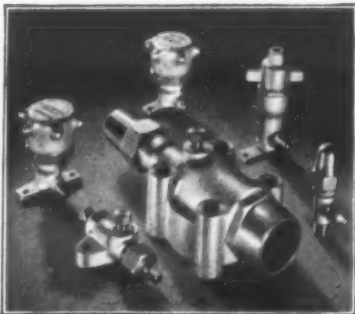
Lollipop Trolley Fixed Up By Counter Freezer User

WALTERBORO, S. C.—"Lollipop Trolley" here has attracted considerable attention and brought a lot of customers into the old painted-up trolley car to buy the counter freezer ice cream which he makes, reports Owner H. N. Starr. Mr. Starr has purchased two more trolleys to be operated in nearby towns.

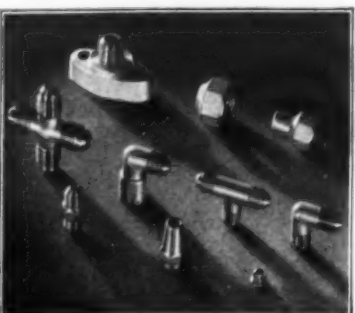
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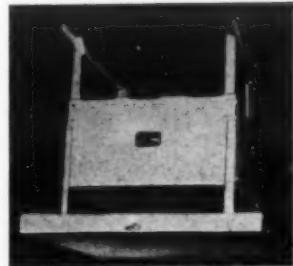
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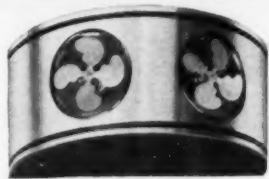


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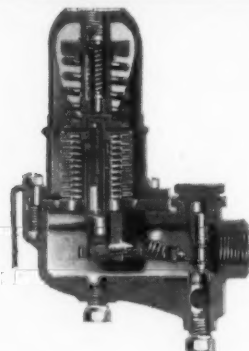


Compact and Convenient For Light or Heavy Work **IMPERIAL** Soldering and Brazing Outfits

ONE of these practical outfits is shown at left. Torch burns acetylene, the tips drawing oxygen from the atmosphere.

Torch, four tips, soldering iron, 6 ft. hose, in handy steel case. No. 32, \$9.00.

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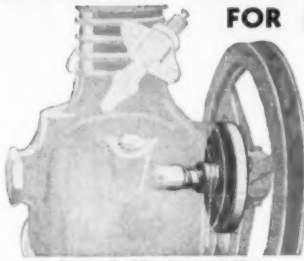
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The valve illustrated—S2V—regardless of range or differential setting opens and closes with a positive snapping action at any previously determined setting which are within its limitations. Exclusive feature is adjustable range of 20° of vacuum to 60 pounds pressure in single valve. Differential is adjustable, varying from 15° of vacuum to approximately 29 pounds at the higher pressure ranges.

Write for Bulletin 17 for full information and detailed drawings.

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Rotary Seal Replacement Unit
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Electric Refrigeration News, 5229 Cass Ave., Detroit, Mich.

Engineering Data Is Given in Catalog Of Rome-Turney

ROME, N. Y.—Featured by an engineering data section prepared on the basis of fundamental data obtained by Prof. G. L. Tuve of the Case School of Applied Science, well-known authority on heat transfer problems, Rome-Turney Mfg. Co. has just brought out a new catalog covering its coils for air conditioning and other applications.

The engineering data section is marked by capacity tables in which capacities are read directly in B.t.u.'s per hour per square ft. of face area for various combinations of refrigerant temperatures, entering and leaving air, velocity of the air, and number of rows of coils.

Application factor data, friction loss estimates, and a log mean temperature difference table provide other necessary information for the engineer to use in selecting the proper-sized coil for any application.

Examples of how to use the data to figure out an application problem are given in complete detail for both coil size determination and capacity determination.

The rest of the catalog describes the method of manufacture of Rome helical fin coils, and lists their advantages as follows: low air resistance, high efficiency fin surface, counter-flow, tube joints reduced, fins integral with tube wall, no self-soldered joints, compactness, and absence of dirt-catching pockets.

Information is presented also on various coil sizes and dimensions, location of inlet and outlet, and connection sizes.

New Small Display Case Marketed by Fogel

PHILADELPHIA — A display case for luncheonettes, restaurants, sandwich shops, taprooms, and dairy stores was recently introduced on the market by Fogel Refrigerator Co.

Designed for "double duty" as storage and display case, it is 4 ft. 9 inches long, 34 inches wide, and 49½ inches high. Ends and bottom consist of three inches of Armstrong Temlok, and the back and other sections of two inches, sealed with liquid hydrolene between spruce.

Front display has two clear vision ¼-inch plate glasses, and the interior display compartment is of porcelain finish with a platter arrangement built into the case. Entire exterior is of porcelain finish also.

One coil is arranged and built into the top of the case, and another across the storage compartment. Accessibility to the storage compartment is through the cutting boards directly below the service doors.

Approximately 20 inches deep, the storage compartment extends to the bottom of the case, as well as the full length of 14 inches. It is lined with rust-proof, galvanized sheet steel.

Compressor compartment is located across the entire front of the case with removable grill on each side. An electric light reflector runs the full length of the case.

Kelvinator Equipment Used in New Trailers

LOUISVILLE — Huber & Huber Motor Express, interstate trucking company here, recently purchased two mechanically refrigerated semi-trailers from Fruehauf Trailer Co., for use in its nightly run between Chicago and Louisville.

Titled Type "F" body, each of the new trucks is constructed with all-metal, sun-reflecting roof, coin pressed seams, and moisture-proof molding.

Refrigerating equipment in each truck includes a Kelvinator refrigerating unit powered by a Whitaker-Upp drive, manufactured by the Century Electric Co. Equipment is mounted in the front of each trailer, and is accessible from the outside by means of a specially constructed door. Temperature control equipment is placed on the front of the van.

Cooling system is run by a ball-bearing power take-off driving a special generator, mounted underneath the truck frame. A special connecting cable is used between the tractor and the trailer.

The cooling plant can be operated when unit is in storage for the night. This is accomplished by attaching the electric cable to a dual electric motor, by which the system can be operated through the ordinary light socket, as well as through the truck generator.

Insulation in each van includes: 3 inch Dry Zero seal pad sidings, 2 inch Naturezone floorings, and 3 inch Wadex insulation on ceilings.

Foodstuffs, vegetables, etc. which comprise the trucks' nightly load, are precooled before being loaded, and vary in temperature no more than 2° during the 320-mile run.

Commercial Refrigeration

Brine Spray Air Blast Method Used Widely in Cooling Fruit

SEATTLE—In the fruit industry, which has for a long time been one of the chief outlets for refrigerating machinery and equipment in the Northwest, the "brine spray air blast system" is most popular at this time, and is gaining increasing favor, reports S. J. Austin of York Ice Machinery Corp.

This system has gained preference because it affords the constant refrigerating capacity necessary for fruit plants, according to Mr. Austin.

With old methods of refrigeration, frosting of coils cut down refrigerating capacity, and defrosting was undesirable. A brine spray plant, however, has no defrosting problem and maximum operation can be had at all times.

Faster Freezing for Pears

This method, Mr. Austin says, also enables rapid cooling of fruit, which is particularly important in handling pears. As many as 60 or 72 hours were required for cooling pears by former methods, which can now be cooled in 30 to 36 hours, and in some cases 24, although the latter time is not recommended. Twenty-four hour cooling, he warns, is apt to result in some frozen fruit in the part of the pack nearest the supply duct.

Combination rooms are now being used in a large measure for both precooling and storing. Some of these combination rooms, Mr. Austin reports, are as large as 100 ft. x 100 ft. and 11 or 12 ft. high, and with proper air distribution very good results are obtained during precooling period with incoming air at 25° and a room temperature averaging 30° F.

Although little attention is paid to humidity during the receiving period because there is already an excess of moisture, during the storage period, which lasts as long as six months, more attention is paid to relative humidity in the room now than a few years ago, Mr. Austin explained.

Within certain limitations, he says, relative humidity is controlled by the temperature split between entering air and room temperature. During storage periods in most plants this split is only 1° F., which gives almost the most humid condition obtainable. The average plant will show about 85% relative humidity at 30° F.

Air Washing Frees Gases

Air washing keeps the rooms free of a large percentage of the gases given off by the fruit, because the gases are absorbed by the moisture and gradually liberated through the overflow which takes place due to moisture pickup, Mr. Austin maintains. During storage this moisture does not necessarily come from the fruit, but from the natural wall leakage. However, during the receiving period, the greatest moisture pickup is due to extraction of field heat.

Load concentration, always desirable but seldom practicable before, is said to be easily obtained now by proper sized ducts and manipulation of air distributing outlets.

In some cases, the whole capacity of the refrigerating plant may be concentrated on some particular part of the building that may be receiving a heavy load. This was done for the first time at Yakima in 1925, and since then 80 plants have been installed in the states of Washington and Oregon, ranging in size up to 500-car capacity, with an average of 100 to 200-car capacity.

Most of these installations have been for pear and apple storage, but the method has also proven the most

successful one for celery and a variety of other applications.

One of the most successful is a 0° F. storage plant for the holding of frozen packaged goods, which during its three years of operation has had no forced shutdown and no more than 1° temperature variation.

In this plant there are two storage rooms, each 140x100x12 ft. The installation, which was made at Hillsboro, Oregon, by the York Ice Machinery Corp., consists of standard spray type cooling units with special brine accessories.

New Plants Built

Among the new plants built in the Northwest last year in anticipation of a heavy tonnage of fruit, one of the most novel, Mr. Austin states, was the Van Horn plant No. 5 for the Terminal Ice & Cold Storage Co. of Portland, Oregon.

The two-story building is 200 ft. x 180 ft., with 12 ft. ceiling height. The walls have 12 inches of interlocking tile, and the interior is mill construction. Each floor is divided into four rooms and the building is considered in two divisions vertically, north and south halves.

Each half has its own spray cooler unit, so that if the building is half full, one unit may be shut down and the fruit moved from one side to the other by conveyors. This eliminated insulation between floors, which are of laminated construction, and also saved room height.

Walls and ceiling of the building are finished with panels of plywood of special waterproof fabrication, as are the air ducts which are of plywood with turns of long sweep radius of formed panels. The use of plywood adds to the construction speed, and gives a smooth, finished job, Mr. Austin reports.

The duct arrangement gave perfect distribution of air throughout the storage space.

Equipment consists of 7½ in., 9 in. and 10 in. double-cylinder compressors, two shell-and-tube condensers, receiver, thermostatic type non-condensable gas separator, and discharge gas water heater. A 600 g.p.m. condenser water spray pond is used.

A discharge gas water heater is connected to the circulating pumps discharging to the spray pond, and in the event of a frozen roof, warm water can be furnished for thawing out the pond. In addition, this apparatus furnishes warm water to the engineer's shower bath, and also acts as a very efficient discharge gas oil separator, Mr. Austin says.

Circulating fans each have a capacity of 63,000 c.f.m. and each pump has a capacity of 600 g.p.m.

555, Inc., Stages Commercial Display for Butchers

LITTLE ROCK, Ark.—Roy E. Stueber, president of 555, Inc., Kelvinator distributor in this territory, capitalized on the National Live Stock & Meat Board's meat cutting demonstrations for butchers here by inviting the board to conduct the meetings in Rainbow Garden, night club atop the 555 building.

He then set up a Kelvinator commercial display in the hall, where everyone attending the convention could see it. Several hundred Arkansas butchers, present for the demonstration, went back home with the definite impression that 555 was the state's headquarters for commercial refrigeration equipment.

EVAPO CONDENSER ASSURES BIG MONEY!

**New Profit Item, with Ready Market
Compact—Complete—Easy to Install
FOR USE WITH ALL MECHANICAL
REFRIGERATION UNITS**

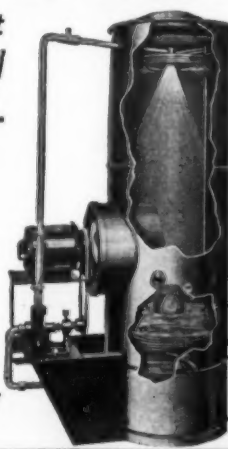
A combined water tower and highly efficient condenser.

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ECONOMICAL IN OPERATION**

Completely pays for itself in a short period by savings in water and power consumption.

DEALERS NOTICE—Write for complete information and dealer's set-up.

THE BRUS COMPANY
215 EAST 20th ST. KANSAS CITY, MO.



New Borg-Warner Parts Co. Store



New home of the Borg-Warner Parts Co., refrigeration parts distributor, at 21st and Indiana Aves., Chicago, occupies more than 6,000 sq. ft. of floor space. Parts are stocked on steel shelving.

Letters from Service Men

Refrigeration Lessons

Wanted by Trade Schools

The following letter has been received from a trade school in the Middle West:

"We, as a Trade School, contemplate offering refrigeration training courses, and we are looking for an appropriate text upon which to base both a resident and home study course. We would appreciate it very much if you will inform us as to a good text or combination of texts for this purpose."

Answer: Regarding an appropriate text upon which to base a resident and home study course of refrigeration training, we have a book which is made to order for such purpose in the MASTER SERVICE MANUAL.

Two or three other schools have recently inquired regarding the possibility of securing a series of home study lessons which could be used in connection with the MANUAL as a text book and we have been considering a plan to meet this need.

Since the MANUAL has been produced at considerable expense and is copyrighted, we naturally must reserve all rights in connection with it. Mr. K. M. Newcum, the author, has had several years' experience as an instructor in vocational schools and the problem is largely one of his ability to find time to do the job.

May we suggest that you let us know regarding the quantity of lesson-sets which you might be able to use or the approximate amount you would be willing to pay for the development of a special service to meet your particular requirements.

Experienced Draftsman Looking For a Refrigeration School

I was advised by the local Frigidaire dealer that you would be able to help me in finding a practical school for servicing electrical refrigerators.

In January, 1935, I was contacted

INFORMAL TALK NUMBER 58

The Demand For R-A-C-I Trained Men Increases

As this issue of Refrigeration News goes to press, twelve good refrigeration jobs are going begging for want of R-A-C-I Trained men to fill them.

In another week several more men will be available for employment. In two weeks still another group will be ready-trained as your industry wants them trained. Since we cannot hurry men through, and there are no short cuts in R-A-C-I Training, we ask your indulgence. We know you will find these men worth waiting for.

If you are not already familiar with the advantages of employing R-A-C-I Trained men, write for particulars of this industry-supervised and "officially" endorsed training.

No obligation.

The REFRIGERATION AND AIR CONDITIONING INSTITUTE
2150 LAWRENCE AVE. • CHICAGO



The Officially Endorsed School

by a school under the name of Refrigeration Institute with a representative in the Park Square Bldg., Boston, and their headquarters in Cleveland, Ohio. I wrote both places but the letters were returned.

I am a draftsman by trade with a lot of practical experience in the nitrate production field and am confident I will be successful in this new field.

I would appreciate any information you would give me as I am anxious to get started.

Thanking you in advance, I remain, respectfully yours—Paul L. Costello, 114 Mark Ave., Syracuse, N. Y.

Answer: We have no information regarding a "Refrigeration Institute" in Boston or Cleveland, Ohio.

We would suggest that you get in touch with the Refrigeration & Air Conditioning Institute, 2150 Lawrence Ave., Chicago, Ill., or the Utilities Engineering Institute at 404 North Wells St., Chicago, Ill., or at 17 W. 60th St., New York, N. Y.

Each of these schools has a well developed course of study.

From your letter we judge that you have had considerable practical experience and therefore believe that you would find the MASTER SERVICE MANUAL, published by this company, very easy to understand and that it will give you a great deal of the desired information. In fact, we suggest that you invest \$3.00 in the MANUAL before making the larger investment in the course of training. We would not make that recommendation in the case of an untrained man of limited education who needs the constant supervision of instructors.

It also will be worth your while to subscribe to ELECTRIC REFRIGERATION NEWS in order to get the advantage of the "COMMERCIAL SERVICE MANUAL" which will be published in serial form in the NEWS during the next several months. You may enter a subscription for six months only at \$1.50, starting with the July 1 issue which contains specifications for all 1936 models of all makes of household electric refrigerators.

Should He Go Into the Service Business?

What are the prospects in the independent service business? This subscriber wants to know. His name, address, and other identifying information have been omitted:

"Will you please give me your personal opinion in my case and to be used confidentially by me.

"I am 50 years old, in good health, and have a good education. I learned my trade as an electrical machinist and traveled on the road selling supplies. Have been in my present position 12 years and receive \$175 per month. I own my home clear. I am married but have no children. I have a wide acquaintance. I have a good shop with lathe and plenty of tools. I have been working with refrigerators and oil burners for nearly a year. I receive your NEWS weekly, have your MANUAL, and several books which I study. I dislike very much my present work and am very fond of anything mechanical.

"Now what do you advise me to do? If there is a future in refrigeration I want to take advantage of it. I want to get into the servicing end, not the selling game. How will servicing work out with all these long guarantees the companies are giving? Do you think it will end sometime? And if they keep on what are the chances for an independent service man?

"A person just starting out would have to advertise in what way to get the best results?

"This town is . . .

"Leaving age out what do you think would be best?"

Answer: We hesitate to offer you any advice but we may be able to give you some information which will be helpful in deciding your course.

In general, the information coming into our office indicates that independent servicemen are doing very well. The business seems to be growing

very rapidly. Some of the indications are:

(1) A greatly increased number of subscriptions from servicemen during the past year.

(2) Their letters indicate that they are busy. They want all sorts of information, and have few complaints.

(3) The jobbing business is growing at a great rate. These concerns sell parts and supplies to servicemen. Their volume of business has grown tremendously during the past year or two. They are getting out bigger catalogs. They have sold hundreds of copies of the Master Service Manual. They seem to be prosperous.

(4) We hear more about companies specializing in reconditioned refrigerators. We get letters from them wanting to know where they can buy job lots of used units. Apparently they are doing a big business.

(5) The classified advertising from the shops which specialize in repairing and rebuilding refrigerator parts has been growing. We have had a few complaints from subscribers regarding delays in getting shipments returned. Last week we investigated a complaint of a subscriber who had sent a unit to a company in Chicago. Our representative called and found the delay was simply because they were too busy to handle the job promptly or to take care of the correspondence.

(6) Reports of Editor George Taubeneck from San Francisco and Honolulu told in some detail about the large volume of business being handled by companies which buy used refrigerators and recondition them.

(7) The Frigidaire Corp. has recently changed its policy to provide for the sale of Frigidaire parts to independent service companies because of the demand from the field.

(8) The statistics from manufacturers indicate that 1936 will be the biggest year, by far, in the history of the industry. At least two million household units will be sold.

(9) The commercial refrigeration business is booming after a slump of several years.

(10) The air-conditioning business is opening up and will undoubtedly develop into an enormous business within the next few years.

We now have over 50 people on staff of the NEWS, yet we have recently bought new furniture and equipment so as to expand our own organization. We see all kinds of opportunities to develop our own services to the refrigeration and air conditioning industries. In brief, we think this is a good field and that we are just getting a good start (after 10 years in the business).

But, as we have said before, we hesitate to offer you any advice about what you should do because so much depends upon your own ability to adapt yourself to the situation and make the best use of the opportunities offered. We suggest these general rules about going into business for yourself:

(1) Don't cut loose from a salary job and start out on your own because somebody advises you to do so.

(2) Don't let anybody's advice stop you from setting yourself up as an independent operator if you know what you want to do and how to do it.

Starting Service Business In Western Canada

I am anxious to get a copy of REFRIGERATION NEWS also the subscription rates for western Canada and any books or pamphlets on refrigeration service as a matter of fact anything that will be of assistance to a man just starting out in the service field independently, there aren't any organized service companies in this district so I have got to rely entirely upon the data I can get from manufacturers and publishers and my own horse sense.—A. E. Wyatt, Box 572, Duncan, B. C., Canada.

Enclosed find a P.O.M.O. for \$5.00. Please renew my ELECTRIC REFRIGERATION NEWS subscription. Also send the copy of REFRIGERATION ENGINEERS MANUAL.

Please send my paper to the same address although I'm now in Denver, Colo.

Please put me on your mailing list for catalogs.—Mr. Gilbert Reid, 2315 W. Platte, Colorado Springs, Colo.

The Buyer's Guide

Suppliers Specializing in Service to the Refrigeration and Air Conditioning Industries

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The Master Service Manual (\$3.00 per copy) includes the necessary instructions for servicing all the fundamental types of household systems. Detailed instructions for the servicing of more than a dozen "orphan makes" are also included.

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ELECTRIC REFRIGERATION NEWS

The Buyer's Guide

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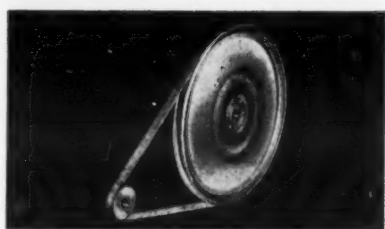
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Because of their outstanding advantages Dayton V-Belts have been used as original equipment on leading makes of air conditioning equipment, electric refrigerators, washing machines and other appliances for many years.

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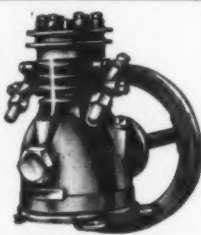
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All bearings diamond bored. Positive lubrication of piston by newly developed process plus forced feed lubrication in all models.

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- ✓ Retains for \$29.50.

Filterpure is the fastest selling article ever introduced in the refrigeration field. It is the "missing link" to 100% refrigeration. Write today.

BETZ CORPORATION BETZ BUILDING Hammond, Ind.

Patents

Issued June 23, 1936

2,044,811. MEANS AND METHOD OF REFRIGERATION. Bo Folke Randel, San Diego, Calif. Application November 14, 1932, Serial No. 642,531. 6 Claims. (Cl. 62-115.)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757.)

2,044,822. THERMOSTATIC SNAP ACTION VALVE. Sidney P. Vaughn, United States Navy, Ackerman, Miss. Application April 14, 1932, Serial No. 605,262. 17 claims. (Cl. 236-48.)

(Granted under the act of March 3, 1883, as amended April 30, 1928; 370 O. G. 757.)

2,044,832. AIR CONDITIONER. Lachlan W. Child, Toledo, Ohio, assignor, by mesne assignments, to Aerlet Air Conditioner Company. Application June 26, 1934, Serial No. 732,411. 13 Claims. (Cl. 257-244.)

2,044,873. ROTARY COMPRESSOR. Cecil J. Beust, Atlanta, Ga. Application November 21, 1933, Serial No. 699,066. 17 claims. (Cl. 230-205.)

2,045,951. REFRIGERATION. Carl Georg Munters, Stockholm, Sweden, assignor, by mesne assignments, to Servel, Inc., Dover, Del. Application February 10, 1934, Serial No. 710,629. In Germany February 28, 1933. 12 Claims. (Cl. 62-118.)

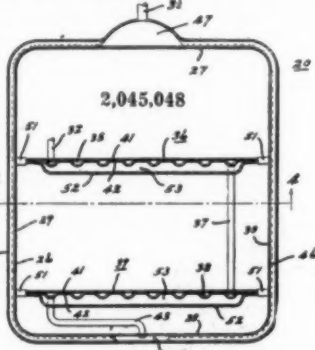
2,045,957. COMPRESSOR. George L. Streiber, St. Louis, Mo. Application May 22, 1933, Serial No. 672,089. 20 Claims. (Cl. 230-185.)

2,045,000. REFRIGERATING APPARATUS. Harry F. Smith, Dayton, Ohio, assignor, by mesne assignments, to General Motors Corporation. Application July 30, 1931, Serial No. 554,061. Renewed December 12, 1933. 14 Claims. (Cl. 220-9.)

2,045,002. AIR DISTRIBUTING DEVICE. Philmore F. Sperry, Chicago, Ill., assignor to Excel Auto Radiator Company. Application March 7, 1935, Serial No. 9,763. 1 Claim. (Cl. 98-2.) (Sketch excluded.)

2,045,014. COMPRESSOR. Mahlon W. Kenney, Chicago, and Arthur R. Constantine, River Forest, Ill., assignors to General Household Utilities Company, Chicago, Ill., a corporation of Delaware. Application July 7, 1934, Serial No. 734,077. 6 Claims. (Cl. 103-135.)

2,045,043. REFRIGERATING SYSTEM. Wilbur G. Midnight, Bay Village, Ohio, assignor to Perfection Stove Company, Cleveland, Ohio, a corporation of Ohio. Application October 20, 1933, Serial No. 694,453. Renewed January 25, 1935. 14 Claims. (Cl. 62-120.5.)



2,045,048. REFRIGERATING APPARATUS. Edward B. Newill, Dayton, Ohio, assignor to General Motors Corporation, Dayton, Ohio, a corporation of Delaware. Application July 31, 1934, Serial No. 737,787. 8 Claims. (Cl. 62-95.)

2,045,053. REFRIGERATING SYSTEM AND METHOD. Marc Resek, Cleveland Heights, Ohio, assignor to Perfection Stove Company, Cleveland, Ohio, a corporation of Ohio. Application October 20, 1933, Serial No. 694,455. Renewed January 25, 1935. 16 Claims. (Cl. 62-120.5.)

2,045,134. REFRIGERATION. William R. Hainsworth, Larchmont, N. Y., assignor, by mesne assignments, to Servel, Inc., Dover, Del., a corporation of Delaware. Application May 31, 1934, Serial No. 728,253. 6 Claims. (Cl. 62-108.5.)

2,045,204. REFRIGERATING SYSTEM. Harry C. Shagalloff, Evansville, Ind., assignor, by mesne assignments, to Servel, Inc., Dover, Del., a corporation of Delaware. Application July 8, 1932, Serial No. 621,326. 28 Claims. (Cl. 62-119.5.)

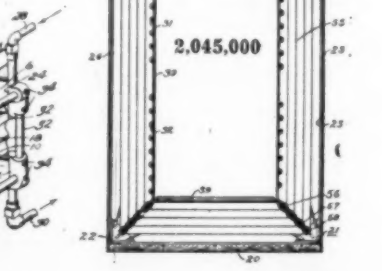
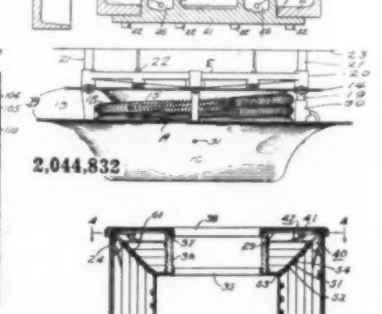
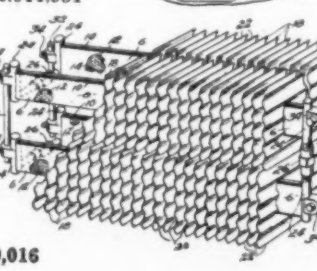
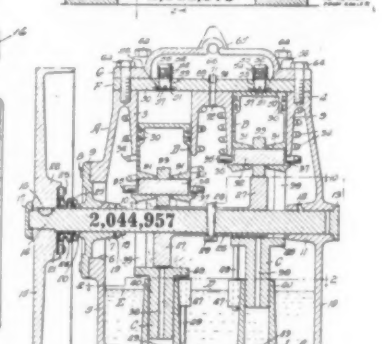
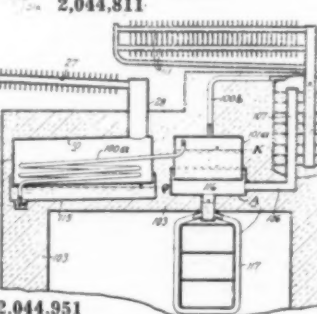
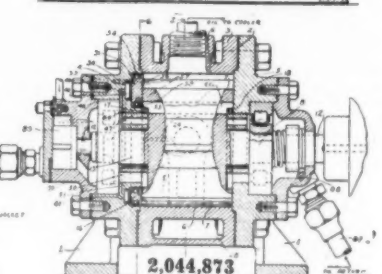
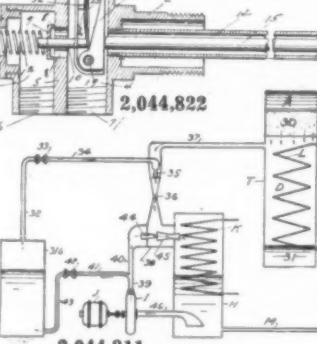
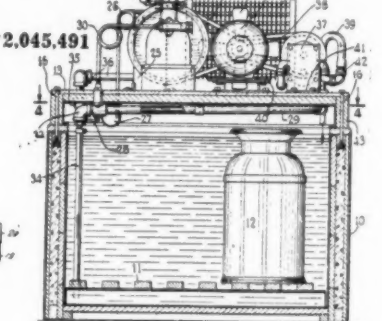
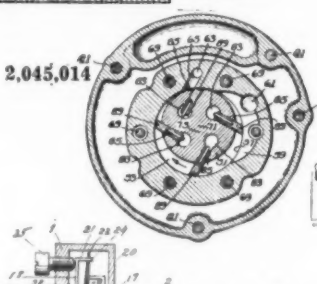
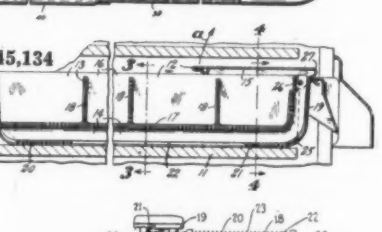
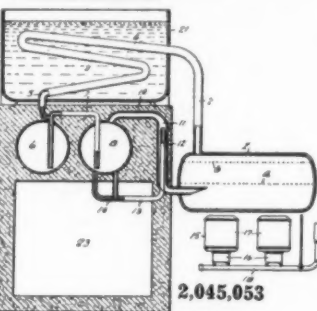
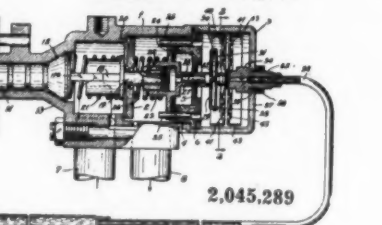
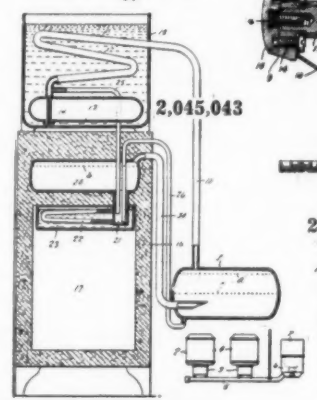
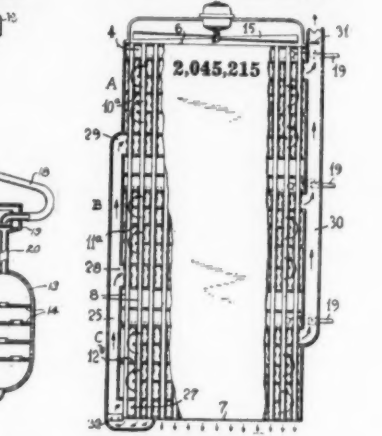
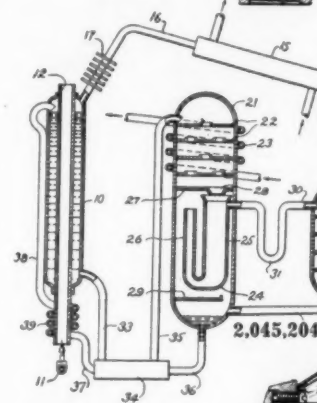
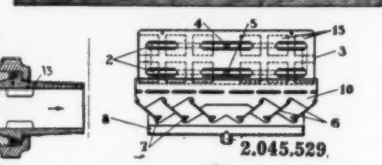
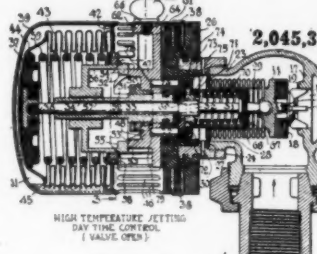
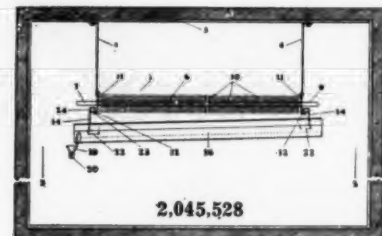
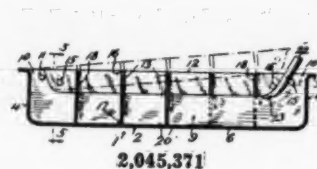
2,045,215. COOLING APPARATUS. George C. Coverston, Fallon, Nev. Application July 10, 1935, Serial No. 30,680. 2 Claims. (Cl. 62-139.)

2,045,289. THERMOSTATIC VALVE CONTROL. Charles D. Bolin, St. Louis, Mo., assignor to American Thermometer Company, St. Louis, Mo., a corporation of Missouri. Application July 19, 1934, Serial No. 736,020. 10 Claims. (Cl. 236-47.)

2,045,332. TEMPERATURE REGULATOR. Carl A. Otto, Milwaukee, Wis., assignor to Johnson Service Company, Milwaukee, Wis., a corporation of Wisconsin. Application July 13, 1933, Serial No. 680,300. 22 Claims. (Cl. 236-47.)

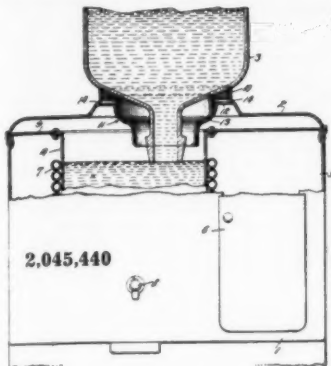
2,045,371. AUTOMATIC ICE CUBE RELEASE. Julius Roberts, Brooklyn, N. Y. Application December 9, 1933, Serial No. 701,602. 9 Claims. (Cl. 62-108.5.)

(Concluded on Page 19, Column 1)



Patents

(Concluded from Page 18, Column 3)



2,045,440. COOLER. Raymond W. Cole, Cranford, N. J., assignor to Cordley & Hayes, New York, N. Y., a corporation of New York. Application September 15, 1933. Serial No. 689,586. 3 Claims. (Cl. 62-143.)

2,045,491. MILK COOLER. Frank D. Peltier, Evansville, Ind., assignor to Servel, Inc., New York, N. Y., a corporation of Delaware. Application March 1, 1934. Serial No. 713,439. 15 Claims. (Cl. 62-101.)

2,045,528. COOLING UNITS AND COMBINATION AIR CIRCULATOR AND DRIP PAN FOR THE SAME. Richard W. Kritzer, Chicago, Ill., application March 16, 1934. Serial No. 715,800. 2 Claims. (Cl. 62-103.)

2,045,529. COMBINED COOLING UNIT AND DRIP PAN. Richard W. Kritzer and Anthony F. Hoesel, Chicago, Ill., assignors to Peerless Ice Machine Company, Chicago, Ill., a corporation of Illinois. Application April 15, 1935. Serial No. 17,598. 9 Claims. (Cl. 62-103.)

REISSUE

20,016. REFRIGERATING COIL. Ernest R. Hopkins, Kansas City, Mo., assignor of one-half to James P. Curry, Kansas City, Mo. Original No. 1,966,096, dated July 10, 1934. Serial No. 616,833, June 13, 1932. Application for reissue August 16, 1935. Serial No. 36,557. 21 Claims. (Cl. 257-255.)

PATENTS

HAVE YOUR patent work done by a specialist. I have had more than 25 years' experience in refrigeration engineering. Prompt searches and reports. Reasonable fees. H. R. VAN DEVENTER (ASRE), Patent Attorney, 342 Madison Avenue, New York City.

Questions

Sears Kerosene Unit

No. 2839 (Dealer, Ohio).—"Send me the name of the manufacturer of the kerosene refrigerator that is sold by Sears Roebuck & Co."

Answer: The kerosene refrigerator sold by Sears Roebuck & Co. is manufactured by Allyne Refrigerator Corp., c/o Cleveland Tractor Corp., East 193rd St., Cleveland, Ohio.

Baudelot Storage Tank

No. 2840 (Dealer, Kentucky).—"We have been requested to submit an estimate on equipment for bakery re-



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U. E. I. students STAND OUT when they enter the Electric Refrigeration and Air-Conditioning Industry.

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frigeration including a four ton Baudelot or submerged type storage tank. We are not familiar with the Baudelot tank and ask that you please advise us by return mail the name of the manufacturer and his address.

Answer: We suggest that you write to the following manufacturers for information on the Baudelot storage tank:

Baker Ice Machine Co.
1518 Evans St., Omaha, Nebr.
Carbondale Machine Corp.
Harrison, N. J.
Frick Co.
Waynesboro, Pa.
Viltir Mfg. Co.
2234 S. 1st St., Milwaukee, Wis.
York Ice Machinery Corp.
York, Pa.

Wants Air Conditioner

No. 2841 (Building Contractor, Louisiana).—"We are very much interested in securing the name and address of a manufacturer of electric refrigerating cool unit, similar to the one manufactured under the name of Kool Air and selling to the user at around \$225 for half-ton capacity."

"Mr. Earl M. Boden of Chicago has referred me to you, stating that if there is any such competitive unit to the Kool Air on the market, you would be able to advise."

Answer: Complete specifications of all air conditioners with a cooling function (this includes self-contained units) will be published in the July 29 issue of ELECTRIC REFRIGERATION NEWS.

Such information was published previously in the May 20 issue, but as our supply of this issue is exhausted, we are planning to publish these specifications again in the July 29 issue with revisions and corrections.

Commercial Operation

No. 2842 (Manufacturer, Michigan).—"We are attempting to obtain information on the operation of a commercial refrigeration department. Have you published any article recently dealing with that subject?"

Answer: Articles on "How to Operate a Commercial Department," or on other details of commercial refrigeration merchandising, have appeared in the following issues of ELECTRIC REFRIGERATION NEWS:

April 13, 1932—"How to Sell Commercial Units," by E. R. Stuart, Chicago, Copeland commercial manager; Aug. 23, 1933—"How a Commercial Department Operates," by C. G. Blackburn, commercial manager of Caswell, Inc., Detroit; Dec. 6, 1933—"Letter on 'How to Train Commercial Salesmen,'" by G. R. Lindahl, Commercial Refrigerator Mfg. Co., Los Angeles; Nov. 14, 1934—"Harlan Suggests Ways to Boost Winter Sales"; May 8, 1935—"Plan for Getting Commercial Jobs Outlined by Utility Management Corp."; March 4, 1936—article on eastern sales conference of Servel distributors.

You may also find information of value in the interviews with commercial refrigeration distributors and dealers published in the News this spring. Articles on Chicago distributors were published in the April 15 and 29 issues; On Cleveland and Youngstown, Ohio, dealers in the May 6 issue; Akron and Canton dealers in May 13 issue; and on Fort Wayne and Indianapolis dealers in the June 17 and 24 issues.

Comparative Sales Figures

No. 2843 (Advertising Agency, Michigan).—"How did industry sales for the last quarter of 1935 compare with sales in the last quarter of 1934? How do sales in the first two quarters of 1936 compare with those in the first two quarters of 1935?"

Answer: According to estimates made by ELECTRIC REFRIGERATION NEWS, sales by manufacturers to distributing outlets in the last quarter of 1935 totaled 192,900 units as compared to a total of 153,100 units sold in the last quarter of 1934.

For the first quarter of 1936 it was estimated that 597,500 electric refrigerators were sold, as compared to 459,800 in the same period the year previous. Second quarter figures are not available, as June sales reports are not yet available, but the total for April and May of this year was 665,500 units, as compared with 543,000 units in the same two months in 1935.

Display Case Shelving

No. 2844 (Manufacturer, Pennsylvania).—"We are interested in having the names of manufacturers of wire shelving for meat display cases, especially those located in the east."

Answer: Manufacturers of wire shelving for refrigerators are listed, with addresses, on page 234 of the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

Electrolux Sales

No. 2845 (Research Company).—"I noticed in the ELECTRIC REFRIGERATION NEWS issue of April 1, 1936, page 20, that Servel, Inc. (export only), refrigerators are included in the sales of

14 companies. Can you tell me if these are gas refrigerators or electric refrigerators, and also whether Servel domestic gas refrigerators are included in the total February sales figure of 186,200 units."

Answer: It is our understanding that sales of Electrolux gas refrigerators are not included in the Nema reports, and that the reason that Servel household sales are reported in the export section is that Servel makes an electric refrigerator for export purposes only.

Coolaire Specifications

No. 2846 (Dealer, Indiana).—"Is Coolaire a standard air-conditioning unit? Why wasn't it included in the specifications of air conditioners listed in your May 20 issue?"

Answer: A Coolaire room air conditioner is made by the Nomis Oil Burner Co. of Lafayette, Ind. This company was invited to submit specifications of its equipment for the May 20 issue, but failed to do so. Another opportunity has been offered them to submit their data for the July 29 issue, in which the specifications will be reprinted.

Portable Conditioners

No. 2847 (Dealer, Wisconsin).—"We would like the names of manufacturers of portable air-conditioning units that might want representation in this territory."

Answer: Manufacturers of self-contained room-type air conditioners, (most any of which can be made portable) can be determined by checking the specifications of 1936 air-conditioning equipment which will be published in the July 29 issue. We suggest you contact manufacturers that furnish specifications of self-contained equipment.

Valves, Tubing, Fittings

No. 2848 (Supply House, Oklahoma).—"Will you kindly send us a copy of your magazine and also give us the names of some of the larger manufacturers of refrigeration equipment, such as valves, tubing, fittings, etc?"

Answer: Principal manufacturers of the various lines of equipment which you mention advertise their products in ELECTRIC REFRIGERATION NEWS, and we suggest that you consult the advertising in the News columns to obtain the names of the leading manufacturers.

Complete lists of all manufacturers of household and commercial refrigeration and air conditioning parts, supplies, and equipment will be found in the 1935 REFRIGERATION AND AIR CONDITIONING DIRECTORY.

'36 Commercial Service Manual Is Issued by Universal Cooler

DETROIT—Just made available by Universal Cooler Corp. is a new commercial refrigeration service manual. Prepared under the direction of H. L. Morrison, national service manager for Universal Cooler, the manual will sell for 60 cents.

In addition to covering service complaints and remedies on Universal Cooler machines, the new manual offers a considerable amount of information on various phases of commercial refrigeration.

A general outline of the theory of refrigeration is given, as is a complete description of the properties of methyl chloride and Freon. Thermodynamic charts for these two refrigerants supply additional data.

Instructions for the installation of commercial refrigeration units are covered in detail and include electric wiring information, starter data with tables and drawings, and a complete outline of possible motor troubles and their remedies.

Although the manual deals more particularly with 1936 Universal Cooler models, brief descriptions of the older models and an outline of their service requirements are listed.

Various refrigeration system parts not manufactured by the company, such as water valves, controls, expansion valves, and solenoid valves, are described, and possible service troubles discussed.

Emerson Electric Leases Additional Building

ST. LOUIS—Emerson Electric Mfg. Co. is undergoing a program of expansion which includes the leasing of about 43,000 sq. ft. of office space.

The new warehouse's location on a railway siding provides improved carload shipping facilities and releases additional space in the Washington Ave. plant for manufacturing.

General offices of the company are to be moved two blocks east of their present location to a two-story building located on the southeast corner of Nineteenth and Washington Avenues. Alterations are being made so that they may occupy the entire second floor and part of the first.

The Buyer's Guide

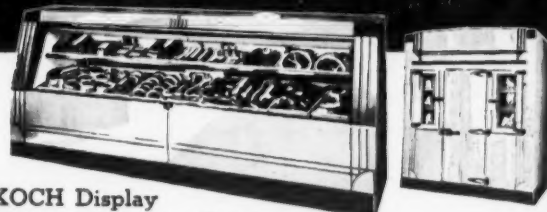
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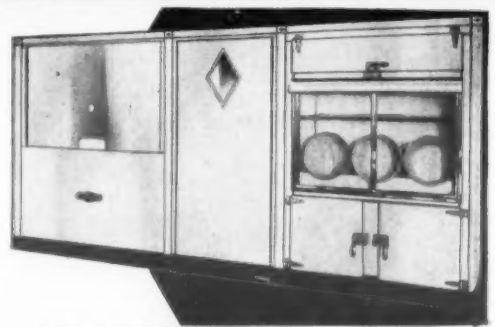
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